

# **A STUDY ON SAGANA VATHAM**

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## INTRODUCTION

God has created many wonderful creations of all this creation  
“Man” is the supervene.

“மரவும் மரக்களும் ஐயறிவினவே  
மக்கள் தாமே ஆற்றிவுயிரே”

- தொல்காப்பியம்

These lines mentioned in Tholkapiam state that the birds and animals possess only five senses but mankind is the only group that possess six senses. They are superior than any other beings in the world in that they can express their feelings and have a divinity.

“உடம்பர் அழியில் உயிரர் அழிவர்  
திடம்பட மெய்ஞ்ஞானம் சேரவும் மட்டார்  
உடம்பை வளர்க்கும் உபாயம் அறிந்தே  
உடம்பை வளர்த்தேன் உயிர் வளர்த்தேனே”

- திருமந்திரம்

This quotation from Thirumoolar's Thirumanthiram stresses the importance of maintaining a healthy body. He says that when one's body deteriorates the soul also deteriorates and prevents the person from attaining “Meignanam”. He says that by knowing the methods of protecting the body from deterioration one can obtain longevity of the soul.

Accordingly to siddha system of medicine the treatment is given not only to the body also to the mind. Since, psychological changes are the causes for a disease, it is apt to say “A sound mind in a sound body”.

The word siddha means “SIDDHI” which means “Perfection” heavenly as “An object to be achieved”.

Siddha system believes that all that present in the cosmos is present in the human being also. It's principles are eternal.

“அண்டத்திலுள்ளதே பிண்டம்  
பிண்டத்திலுள்ளதே அண்டம்  
அண்டமும் பிண்டமும் ஒன்றே  
அறிந்து தான் பர்க்கும் பேரதே”

- சட்டமுனி ஞானம்

Without understanding the basic concept of siddhars one cannot be a perfect siddha physician.

Siddhars have mentioned the functions and constitutions of the body in a beautiful way. All the things in this universe including man are made up of five basic elements namely “Pancha Boothas”. They are Earth, Water, Fire, Air and Space. This maintains the integrity of nature humour called vatha, pitha and Kapha.

The three humours exists in the ratio 1: ½ : ¼ normally. Any deviation in this ratio affects the homeostasis of human physiology and leads to pathological condition called pini (or) Noi.

The Pini (or) Noi must cure by “Marunthu” Marunthu which cure physical, mental illness which posses preventive aspects from diseases and also to postpone death.

Maruthuvam is classified in to 3 types. They are.

1. தேவ மருத்துவம்
2. மானிட மருத்துவம்
3. அசுர மருத்துவம்.

The Sirappu Maruthuvam comes under the theva Maruthuvam.

Sirappu Maruthuvam is a special branch in siddha system of medicine. The specialties are

1. Kaya Kalpam
2. Yoga therapy
3. Varmam
4. Thokkanam
5. Treatment to the psychosomatic disorder (Kirigaiand Kanma Noigal).
6. In Siddha Medicine the dermatological problems are also told under Sirappu Maruthuvam.

The author of this dissertation work has selected **“Saganavatham”** is regarded as one of the vatha disease by **“Yugi Munivar vaithiya Sinthamani – 800”** and the Clinical entity comparable to **“cervical spondylosis”** in modern medicine.

The research of mine analysis the factors that cause pain in the neck 80% of the people who suffer from neck pain those who are engaged in works which make chronic flexion of the cervical vertebrae as in tailor, porters, agricultural labours.

In treating vatha diseases the siddha system of medicine has its wonderful effect so the author has tried to formulate a treatment methodology to treat the disease. The author’s choice of drugs for clinical study are.

1. **Aayil Pattai Chooranam** – Agathiyar Attavanai Vagadam.
2. **Kalappaikizhangu oil** - Pathartha Kuna Vilakkam.

The drugs were prepared by the author and were tried in 20 selected **“Sagana vatham”** cases of various aetiology.

## AIM AND OBJECTIVES

The clinical study of “**Saganavatham**” compared with “**Cervical Spondylosis**” in modern medicine was done in 20 selected cases of both sexes and treated in the In Patient ward of the Post Graduate Department of Sirappu Maruthuvam at Government Siddha Medical College, Palayamkottai.

### **Aim and Objective are Follows:**

- To have a clinical trial in Sagana Vatham affected individuals with selected siddha drugs viz, Aayilpattai Chooranam (Internal Medicine) kalappai Kizhangu Oil (External Application).
- To make a detailed study of various literatures dealing with definition, aetiology, classification, signs and symptoms, prognosis, diet and treatment for “Saganavatham”.
- To expose the greatness and efficiency of siddhar’s diagnostic principles.
- To have an idea of the incidence of this disease with age, sex, occupation, social – economic status, diet and Paruvakalam.
- To have clinical trail with specific medicine.
- To know the extent to which the correlation of aetiology, classification, signs and symptoms of saganavatham with that of modern medicine.
- To study Bio chemical analysis and pharmacological actions of the medicine treated on this disease.
- To utilize the possible diagnostic tools in confirming the diagnosis by clinical investigations.

## SIDDHA ASPECT

In our ancient Siddha literature the diseases are classified into 4448 types based on the Mukkutra theory (vatham, Pitham, Kabam), However vatha diseases got a major role among them. There are 80 types of vatha diseases and Sagana Vatham is one of the type which is taken for my dissertation.

“நாஸடா நாற்பத்து நாலு நூறு  
நயமுடனே நாற்பத்து எட்டு ரோகம்  
பாற்பா வாதமது 84”

- இரத்தின சுருக்க நாடி நூல்

As per our Siddha aspect the first phase in human life is attributed to vatham, the middle to pitham, and the last phase to kabam.

This is known from the following verses.

“வாதமாய் படைத்து பித்த வன்னியாய் காத்து  
சிலேத்தும சீதமாய் துடைத்து”

- தேரையர் மருத்துவ பாரதம்

The details of vatham have been dealt before reviewing the specific signs and symptoms of Sagana Vatham.

### **Definition:**

Vatham is one of the three humours. Among the five elements (pancha boothas) Vatham is formed by vayu (Air) and Aahayam (sky). In a healthy individual the existence of the three humours are in the ratio 1:1/2:1/4 respectively. When the three humours are in the above said ratio, they are called as thathus and when they are deranged, they are called as kuttram.



The alteration of the above ratio may be due to environmental factors, diet and behaviours etc. When vatham is affected the other two thatthus are also affected that leads to the pathological changes.

This is known as follows.

“வாதமலரது மேனி கெடரது”

- தேரையர்

### **RELATION WITH FIVE ELEMENTS:**

Vatham - Vayu + Aahayam

Pitham - Agni

Kabam - Appu + Pirthivi

Vatham has vayu and sky as it's elemental constituents. If vayu and sky (or) any one of them is decreased (or) increased from the normal level, it will surely lead to pathological state of vatham.

Regarding diet, bitter, pungent and astringent tastes contains air and bitter alone contains “SKY”. So if these are consumed in large amounts results in the vitiation of vatham and eventually vatha diseases.

The six tastes and their constituent elements are as follows,

Sweet - Earth + Water

Sour - Earth + Agni

Salt - Water + Agni

Bitter - Air + Aahayam (SKY)

Pungent - Air + Agni (Fire)

Astringent - Earth + Agni

### Relation with Taste:

“புளி துவர் விஞ்சுங்கறி யாற்பூரிக்கும் வாதம்  
ஒளியுவர் கைப்பேறில் பித்தஞ்சீறும் - கிளிமொழியே  
கார்ப்பினிப்பு விஞ்சிற் கபம் விஞ்சுஞ் சட்டிரதச்  
சேரப் புணர் நோயணுகாதே”

Sour and astringent are the tastes that increase vatham.

“வாத மேலிட்டால் மதுரம் புளியுப்பு  
சேதமுறச் செய்யுஞ்சிறையம் - ஓதக்கேள்  
காரந் துவர்கசப்பு காட்டுஞ் சுவையெல்லாம்  
சாரப் பரிகாரம் சாற்று”

Sweet, sour and salt are the tastes that neutralize the vatham.

### THREE PHASES PRAPAKAM (METABOLISM)

PRAPAKAM (METABOLISM)	THODAM	TASTE	FUNCTION
Inippu	Kabam	Sweet	Moistening of Food
Pulippu	Pitham	Sour	Conversion of Food
Kaarppu	Vatham	Pungent	Absorption and separation of food

### ALTERATIONS OF VATHAM

Vatham is specialized in Aadi, Aavani, Purattasi, and Iyppasi Physiologically.

The three humours are affected either themselves or with Udal Thaadukkal, pathologically.

The types of alterations of Vatham are:

### 1. Thannilai Valarchi (தன்னிலை வளர்ச்சி)

**Definition:** A kutram, which is provoked in its own location is called “Thannilai Valarchi”.

**Limitation:** Hatred of the things which are causing Thannilai Valarchi and likeness of the things which are getting opposite properties are the limitations of “Thannilai Valarchi.”

**Duration:** Vatham gets “Thannilai Valarchi” during Mudhuvenil Kaalam (Aani and Aadi).

### 2. Vetrunilai Valarchi (வேற்றுநிலை வளர்ச்சி)

**Definition:** A Kutram, which is provoked to other locations is called “Vetrunilai Valarchi.”

**Limitation:** Signs and symptoms of the affected kutram and the pathological conditions of the Udal Thaadhukkal give the details of the limitations.

**Duration:** Vatham gets “Vetrunilai Valarchi” during kaar Kaalam (Aavani and Purattaasi).

### 3. Thannilai Adaidhal (தன்னிலை அடைதல்)

**Definition:** A provoked kutram, which is neutralizing in its own property is called Thanilai Adaithal

**Duration:** The provoked Vatham neutralizes during koodhir kaalam (Iyppasi and karrthigai)

## FACTORS WHICH ALTER VATHAM

1. When hot foods are mixed with vatham, “Vatham” gets Thanniliai Valarchi”.
2. When cold foods are mixed with Vatham, “Vatham” gets ‘Vetrunilai valarchi’.
3. And when oily foods with hotness are mixed with Vatham. “Vatham” neutralizes in its own property that means healthy conditions.

“வாயுவின் குணத்துடன் சூடணுகில்  
வாயுவினி டங்களில் நோய்களுண்டு  
வாயுவில் குளர்ச்சிதான் கூடிடலோ  
வந்திடும் நலிகளும் வேறிடத்தே  
வாயுவில் அனல்தரும் நெய்ப்பமைந்தால்  
வாயுவும் அடங்கிடும் வாய்மையிது  
வாயுவின் பிணிகளைப் போக்கிடவே  
வகுத்திடும் முனிமொழி கண்டிடுமே.”

- சித்த மருத்துவாங்க சுருக்கம்

### Varieties of Vatham:

The vatham is divided into 10 types according to their locations and functions described in siddha texts.

#### 1. PRAANAN: (Heart Centre)

It corresponds to the Cardiac plexus and refers to the chest. It maintains the action of the heart, the functioning of the mental faculties of perception and concentrations and also cares for the arteries, veins and nerves. It regulates the respiration and digestion. It is otherwise called as “Uyirkkaal”.

## **2. ABAANAN (Moolaadharam Centre)**

It corresponds to the pelvic plexus and controls the excretion. It is focussed in the lower part of the gut and also occupies the sites in the bladder and genitals. It has a tendency to travel downwards. It moves in the whole Genito Urinary Tract and regulates the defaecation, micturition, menstruation, parturition and ejaculation. It is otherwise termed as “Kezhnökkukaal”.

## **3. VIYAANAN: (Fore Head Centre)**

It corresponds to the naso ciliary plexus at the root of the nose and base of the skull and controls the will. It helps in the circulation of energy throughout the entire nervous system and the movements of various parts of the body. It also transports nutrients and blood throughout the entire body. It is also known as “Paravukaal.”

## **4. UDHAANAN: (Throat Centre)**

This corresponds to the pharyngeal plexus in the throat region and controls speech and breathing. It is also responsible for the physiological reflex actions like vomiting, hiccup, cough, etc., It has the tendency to travel upwards. It is otherwise named as “Melnökkukaal.”

## **5. SAMANAN: (Navel Centre)**

It corresponds to the solar plexus in the navel region and controls digestion. It selects the useful substances from the swallowed food and supplies them to the whole body. It balances the other ‘Vayuss’ it is also called “Nadukkaal.”

## **6. NAAGAN:**

It is responsible for the intelligence of an individual, winking, singing and pilo erection.

**7. KOORMAN:**

It is responsible for yawning, closing of mouth (immovable of lower jaw) winking, shedding of tears, vision and opening of the eyes.

**8. KIRUGARAN:**

It is responsible for salivation and nasal secretion. It helps in digestion and meditation. It produces cough and sneeze.

**9. DHEVATHATHAN:**

It is responsible for laziness, lassitude, to quarreling arguing, begging and also for much anger. It helps movements of the eyeball in various directions and is present in genital and anal region.

**10. THANANJEYAN:**

It is present in nose and responsible for swelling of the body and tinnitus. It leaves from the body by blowing up the cranium only on the third day after death.

## SAGANA VATHAM

### Definition:

Saganavatham is one of the vatha disease described in ‘Yugi Vaidhya Sindhamani – 800’. It is a condition dealing with the involvement of the neck which is identical to the cervical spine, comprising the symptoms of pain in the nape of the neck, radiating pain in the upper limbs, feeling of heaviness of the body, mental depression, giddiness, burning sensation of the eyes and constipation.

### Aetiology:

The common aetiological factors for all types of vatha disease including “Saganavatham” have been described generally in Yugi Vaidhya Chinthamani – 800, Agasthiyar Kanma Kaandam – 300 and Agasthiyar Gunavagadam.

#### 1. In Agasthiyar Gunavagadam:

“தொல்லை செய்ய இன்னுவலெகு வாதநோய்கள்  
தொல்லுலகில் மாந்தருக்கு காண்பதுண்டு  
எல்லையில்தலை வாதநோய் நேர்மைதன்னை  
இயல்பாக அறிந்திடவே விபரங் கேளே”  
“விவரமடா அசதிசன்னி மூளை நோவு  
விரிவான மூளையது மிருதுவாகி  
அவனிதனில் திடமாகப் போவதாலும்  
அப்பனே மூத்திரக் குண்டிக்காய் வியாதியாலும்  
தவமுனிவர் தீர்க்கக்கை மேகரோகம்  
தன்மையுள்ள முத்தண்டுக் கொடி வியாதி  
அவமிலாப் பரிசு நரம்புமுத்தங்கண்டாய்  
அனுகுமடா வாதநோய் ஆகும்பாரே”

“அணுகுமடா மாமிசத்தின் வியாதியாலும்  
அப்பனே சூதகத்தின் பெருக்காலும்  
குணமில்லா இரசம் வங்கம் தின்னலாலும்  
குடிகெடுத்த வாதமது உண்டாமப்பா”

- அகஸ்தியர் குணவாகடம்

1. Brain disease
2. Renal disorders
3. Sexually transmitted disease
4. Disease of the vertebral column and spinal cord

2. In Agasthiyar Kanma Kandam – 300

“நூலென்ற வாதம் வந்தவகை தானேது  
துண்மையாய்க் கன்மத்தின் வகையைக் கேளு  
காலிலே தோன்றியது கடுப்ப தேது  
கைகாலில் முடக்கியது வீக்கமேது  
கோலிலே படுகின்ற விருட்ச மான  
குழந்தை மரந்தன்னை வெட்டல்மேல் தோல்சீவல்  
நாலிலே சீவசெந்து கால் முறித்தல்  
நல்ல கொண்பு தழை முறித்தல் நலித்தல் தானே”

- பாடல் 56

3. In Yugi Vaidhya Chinthamani

“தானென்ற கசப்போடு துவர்ப்புறைப்பு  
சாதகமாய் மிஞ்சுகிலும் சமைத்த வண்ணம்  
ஆனென்ற வாரினைது புசித்த லாலும்  
ஆகாயற் றேலது குடித்தலாலும்  
பானென்ற பகலுறக்க மிராவிழிப்பு  
பட்டினியே மிகவுறுதல் பார மெய்தல்  
தேனென்ற மொழியார் மேற்சிந்தை யாதல்  
சீக்கிரமாய் வாதமது செனிக்குந்தானே”

- பாடல் 244



“பகரவே வாதமது கோபித் தப்போ  
 பண்பாக பெண்போக மதுதான் செய்யில்  
 நகரவே வெகுதூர வழி நடகயீகல்  
 நளிரான காற்றுமே பனிமேற் பட்டால்  
 மிகரவே காய்கள் கனிகிழங்கு தன்னை  
 மிகவருந்தி மீறியே தயிர்தான் கொண்டால்  
 முகரவே முதுகெலும்பை முறுக்கி நொந்து  
 முழங்காலும் கணைக்காலும் கடுப்பு உண்டாமே”

- பாடல் 285

“என்னவே வாதந்தா னெண்பதாகும்  
 இகத்திலே மனிதர்களுக் கெய்யுமற்று  
 பின்னவே பொன்னதனையே சோரஞ் செய்து  
 பெரியோர்கள் பிரமணரைத் தூடனித்தும்  
 வன்ன தேவச் சொத்தில் சோரஞ்செய்து  
 மாதாபிதா குருவை மறந்த பேர்க்கும்  
 கன்னவே நிந்தை செய்தால்  
 காயத்திற் கலந்திடுமே வாதந்தானே”

“ஆனான வரன்றனை மதியாமாந்தர்  
 அகதி பரதேசியர்கட் கன்ன மீயார்  
 கோனான குருமொழியை மறந்த பேர்கள்  
 கொலைகளவு பொய்காமங் குறித்த பேர்க்கு  
 ஊனான சடந்தன்னில் வாதம் வந்து  
 ஊற்பவிக்கும் வேதத்தின் உண்மைதானே”

### Clinical Features:

The signs and symptoms of Sagana vatham is described in Pararasasekaram, Yugi Vaithya Chinthamani, Agasthiar Nadi and agasthiar 2000 by the following verses.

“கண்டதேர் சிகன்ன வாதங் கழுத்தின் கீழரைக்கு மேலும்  
மிண்டலங் கரமிரண்டு மிக நொந்து கனத்திருக்கும்  
மண்டியே திமிர்த்துக் குத்தும் வலி மிகத்துளைவுண்டாகும்  
வண்டமர் குழலினாளே மதியினாலுன்னுவாயே”

- பரராசசேகரம்

“கேளுமே கழுத்தின் கீழரைக்கு மேலும்  
கெடியான கரமிரண்டு மிகவே நொந்து  
வாளுமே சரீ ரமெல்லங் கனத்திருக்கும்  
வாலிபர்க்கு மனங்கண்ணு மயக்கமாகும்  
ஏளுமே இரண்டு கண்ணும் எரிச்சலுண்டாம்  
ஏற்றமாய் மலந்தானும் இறுகிக் காணும்  
தேளுமே கெட்டினது போற் கடுக்கும்  
சகனவளி நோயினூட தீர்க்கந்தானே”

- யுகி வைத்திய சிந்தாமணி

## 2. Agasthiyar Naadi

“சொல்லவே வாத மது மீறிற்றால்  
சோர்வடைந்த வாயு வினாள் தேகமெங்கும்  
மெல்ல கைகால் அசதி உண்டாகும்  
மேய்முடங்கும் நிமிர்வொண்ணாத் திமிர் உண்டாகும்”

1. Weakness of the limbs
2. Sluggishness
3. Stiffness
4. Numbness

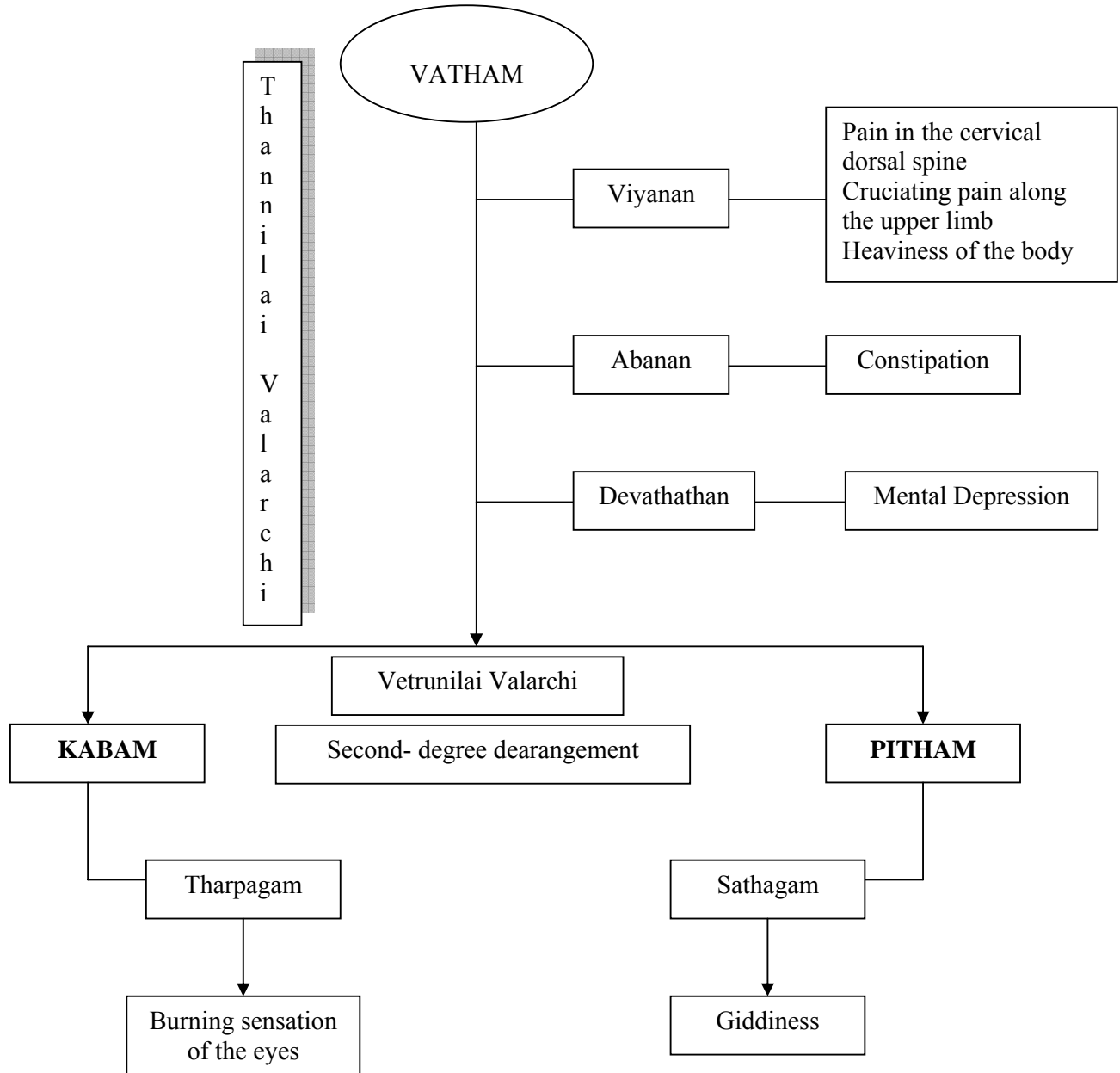
## 3. In Agasthiyar 2000

“வாதத்தின் குணமெதென்னில் மயக்குந்தியெங்கும் மலர்சிவக்கும்  
பாதங்குளிர்ந்து சருவாங்கம்பற்றி நடக்குமுகங் கடுக்குஞ்  
சீதத்துடனே வயிறுபுண்ணாஞ் சிரிப்பித் ததுந்தெறி மூச்சாம்  
போதத் தண்ணிர்தான் வரங்கும் புகழும் பஞ்ச குணமாமே”

1. Giddiness
2. Numbness in the limbs
3. Chillness of body

# PATHOPHYSIOLOGY OF SAGANA VATHAM

## (IN SIDDHA ASPECT)



## **Pathology**

When there is ideality in life style, occupation, food and habits, there is no way for the development of disease. When any one of them is altered it causes derangement of micro elements in the body (Panchaboothangal), improper food habits directly alters the elemental composition while other acts also cause derangement of these elements indirectly.

When elemental composition is altered naturally, uyir thaathugal of the three humours which are made up of these elements get deranged. This simultaneously leads to derangement of seven udal thathukkal and produces symptoms.

The aetiological factors for Sagana Vatham (cervical spondylosis) are both diets that produce excessive vayu and other agents cause vitiation of vayu, aahayam. Depending upon the type of agent, those are vitiated to affect the corresponding uyir thaathu. Here vali and aahayam constitute vatham, earth and water corresponds to kabam and fire corresponds to pitham. So , vatham, pitham and kabam are deranged. Simultaneously udal thathukkal get deranged. These even give rise to clinical features of Sagana vatham.

In the uyir thaathu, vatham, due to the derangement of viyanan there is pain in the cervical and dorsal spine, pain along the upper limbs, pain like cruciating pain and heaviness of the body. Due to derangement of abanan, there is constipation. Due to the derangement of devathathan there is mental depression.

In pitham due to the derangement of sathaga pihtam giddiness results.

Kabam also gets deranged during the course of the disease. Here due to the derangement of tharpagam there is burning sensation of the eyes.

Simultaneously along with uyir thathus is derangement of Saaram, Senner, Oon, Kozhuppu and Enbu. The whole events constitute the clinical condition Sagana Vatham.

### **KUGARANA MAATRAM (PATHOGENESIS):**

The derangement of panjapootha in Sagana Vatham is as follows.

<b>S.No.</b>	<b>Pootham</b>	<b>Nature of derangement</b>	<b>Effect</b>
1.	Mann	↑	Osteophytes
2.	Neer	↓	Giddiness (Decrease blood supply).
3.	Thee	↑	Breaking the Cartilage Fragments.
4.	Vayu	↑↑	Swelling and Pain, Mental Depression.
5.	Aagayam	↓↓	Joint Space Narrows.

### **PINIYARIMURAIMAI (Diagnosis)**

It is very important part of the treatment. It is helpful to select the correct line of treatment and good prognosis. It is based upon the following diagnostic methods.

### **1) PORIAAL THERTHAL**

The physician should examine the patient's porigal by his porigal.

1. Mei: Feels all types of sensations
2. Vaai: For knowing taste
3. Kan: Meant for vision
4. Mooku: For knowing the smell
5. Sevi: For hearing

### **2) Pulanaal Arithal:**

The physician should examine the patient's pulangal (Functions of the sensory organs)

- |           |                           |
|-----------|---------------------------|
| 1. Ooru   | - Perception of sensation |
| 2. Suvai  | - Perception of taste     |
| 3. Oli    | - Perception of vision    |
| 4. Natram | - Perception of smell     |
| 5. Oosai  | - Perception of sound     |

In case of saganavatham pain in the cervical region that radiates either one (or) both upper limbs and numbness over the both upper limbs, shows that ooru is affected.

### **3. VINADHAL (Interrogation)**

The physician should interrogate about the patient's name, age, occupation, native, socio- economic status, dietetic habits, prone to any allergens, complaints, history of previous illness, history of past illness and frequency of attacks. If the patient is unable to speak, or is a child physician should interrogate the details with his immediate relatives who are taking care of him.

#### 4. ENNVAGAI THERVUGAL

The prime method adopted to diagnose the disease is by means of “Ennvagai thervugal”. The value of envvagai thervugal is very important for diagnosing purposes, which is the unique and special method described in siddha system of medicine.

“நாடிப் பரிசம் நா நிறம் மொழி விழி  
மலம் முத்திரமிவை மருத்துவராயுதம்”

- தேரையர்

“மெய்க்குறி நிறத்தொணி விழி நாவிருமலம் கைக்குறி”.

**The diagnosis is made by Envagai thervugal”.**

1. Naadi
2. Sparisam
3. Naa
4. Niram
5. Mozhi
6. Vizhi
7. Malam
8. Moothiram

##### 1. NAADI (PULSE)

The study of Naadi is the important factor in ‘Ennvagai thervugal’ which gives almost the correct diagnosis. Naadi may be studied at ten places in the body, which are Heel, Genital organ, Abdomen, Chest, Ear, Nose, Neck, Hand, Eyebrow and Vertex. But the study of naadi in hand is the best because the radial artery is located superficially. The unique factor which pertaining the soul in the body is known as ‘Naadi’. ‘Naadi

must be studied in right hand for men and left hand for women. The three Uyir thaadhukkal are formed by the combination of

Edakalai + Abaanan - Vaadham

Pinkalai + Piraanan - Pitham

Suzhumunai + Samaanan - Kabam

The naadi can be felt one inch below the wrist on the radial side by means of palpation and percussion with the tip of the index, middle and ring finger corresponding of Vatham, Pitham and Kabam respectively. The three humours exist in the ratio of 1:1/2:1/4 normally. Derangement of this ratio leads to various diseases.

“கரிமுகனடியை வாழ்த்தி

கைதனில் நாடி பர்க்கில்

பெருவிரலங் குலத்தில்

பிடித்தடி நடுவே தொட்டால்

ஒரு விரலோடில் வாதம்

உயர் நடுவிரலில் பித்தம்

திருவிரல் மூன்றிலோடில்

சிலேத்தும நாடிதானே”

In cases of **Sagana vatham** the following stages of Naadi are seen.

**Vatha Naadi:**

“வாதமெனும் நாடியது தோன்றில்

சீதமந்தமொடு வயிறு பொருமல் திரட்சிவாயு

சீதமுறுங் கிராணி மகோதரம் நீரமை

திரள்வாயு சூலைவலி கடுப்புத் தீர்”

- சதகநாடி



“சொல்லவே வாதமது மீறிற்றானால்  
சேர்வடைந்த வாயுவினால் தேகமெங்கும்  
மெல்ல கைகால் எசதியுண்டாகும்  
மெய்முடங்க நிமிர்வொண்ணாத் திமிருண்டாகும்”

- அகத்தியர் நாடி

“காணப்பா வாதமீறில் கால்கைகள் பொருந்தி நோகும்”

- காவிய நாடி

### Vatha Pitha Naadi

“பொருளான வாதத்தில் பித்தஞ் சேர்ந்து

.....

கருவான தேகமதிலுளைச்சல் சேரம்பல்

கைகால் தறிப்பு.....

.....ஊன் குறைதல்”

- சதகநாடி

“திருத்தமாம் வாதத்தோடே தீங்கொடு பித்தஞ் சேரிற்  
பொருத்துகள் தோறும் நொந்து போதவே பிடிக்கும்”

- நோயின் சாரம்

### Vatha Kaba Naadi

“பாங்கான வாதத்தில் சேத்தும நாடி

பரிசித்தால் திமிர்மேவு முளைச்சலாகும்”

- சதகநாடி

“வாதத்தில் சேத்துமமாகில் வலியோடு வீக்கமுண்டாம்”

- அகத்தியர் நாடி

### Pitha Vatha Naadi

“பித்தத்தில் வாதமாகில் பிடரியுங் காலுங் கையுங்

குத்தது போலேயாகுங் குறுகி மெய்பதறும் பின்னே”

- அகத்தியர் நாடி

### **Pitha kaba Naadi**

"பித்தத்தில் சேத்துமமாகில் வாய்குளறுமிகக

.....

பித்தமுமெடுத்துக் கொட்டிப் பிடரியில் நோவதாமே".

- அகத்தியர் நாடி

### **Kaba Vatha Naadi**

"கண்டாயோ சிலெற்பனத்தில் வாதநாடி

கலந்திடுகில் வயிறுபொருமல் கனத்தவீககம்

உண்டாலோ ஓங்காரஞ் சத்தி விக்கல்

உறுத்திரட்சை வாய்வுவலி சன்னிதோடம்"

- சதகநாடி

"வாட்டிடுஞ்ச சேத்துமத்தில் வந்திடும் வாதமாகில்

நாட்டிய கால்கள் போல நரம்பெல்லாம் வலித்து நிற்கும்"

- அகத்தியர் நாடி

In all sagana vatham patients Vatha, Pitha, Thondha naadi was noted.

## **2. Sparisam**

The temperature of body, roughness, dryness patches of skin, growths, sweating, swellings and tenderness are to be examined.

### **In Saganavatham Patients:**

General body temperature – Slight warmth, swelling and tenderness may be present in the nape of the neck and upper extremities.

## **3. Naa (Tongue)**

- Coating of tongue
- Dryness, movement, deviations, ulcers, sensory changes are examined by this criteria.

**In Saganavatham** – the tongue is coated due to constipation.

#### **4. Niram (Colour)**

- Colour of skin
- Mucous membrane
- Hair & nail are examined

#### **In Saganavatham Patients**

- The area of swelling and tenderness – bears inflammatory changes

#### **5. Mozhi (Speech or Voice)**

- Tone of speech (low or high pitched)
- Hoarseness of voice are detected

#### **In Saganavatham Patients**

No change of voice is found out. But pain in neck due to thyroid gland enlargement produces a hoarseness of voice.

#### **6. Vizhi (Eyes)**

- Testing for – acuity of vision, colour-redness, pallor, whiteness, any burning sensation.

#### **In Saganavatham Patients**

- Burning sensation of eyes is present.
- In aged patients acuity of vision is diminished

#### **7. Malam**

- The waste and excretory products of body are called as malam
- The faeces should be in semi – solid without hardness and lossness.
- In faeces examination nature, colour, quantity, presence of blood and mucous are also noted.

**In Saganavatham Patients** –constipation present.

## 8. Moothiram

➤ Neerkuri

➤ Neikuri

“அருந்துமறிரதமும் அவிரோதமாய்  
அ.:கல் அலர்தல் அகாலவூன் தவிர்ந்தழற்  
குற்றளவருந்தி உறங்கி வைகறை  
ஆடிக்கலசத் தரவியே கரதுபெய்  
தொரு முகூர்த்தக் கலைக்குட்பட நீரின்  
நிறக்குறி நெய்க்குறி நிருமித்தல் கடனே”.

### Neerkuri

“வந்தநீர்க் கரிஎடை மணம் நுரை எஞ்சலென்  
றைந்திய லுளவை யறைகுது முறையே”

In Neerkuri the Niram (Colour), Manam (Odour), Nuria (Froth), Edai (Specific gravity) and Enjal (Quantity) is noted. It should be examined withing 3 <sup>3</sup>/<sub>4</sub> nazhigai. Apart from these, the frequency of urination, abnormal constituents such as sugar, protein etc., and sediments are also noted.

### Neikuri

Neikuri is an important test to asses the predominantly affected humour.

“நிறக்குறிக் குரைத்த நருமாண நீரிற்  
சிறக்க வெண்ணையோர் சிறுதுளி நடுவிடுத்  
தென்னுறத் திறந்தொலி யேகாதமைத்ததி  
னின்றதிவலை போன் நெறிவிழியறிவும்  
சென்றது புகலுஞ் செய்தியை யுணரே”  
“அரவென நீண்டிடில் அ.:தே வாதம்  
ஆழி போல் பரவிடின் அ.:தே பித்தம்  
முத்தொத்து நிற்கின் மொழிவதென்கபமே”

Early morning urine of the patient is collected in a glass container and examined within 1 ½ hrs. A drop of gingely oil is dropped and kept in the sunlight at a calm place. The nature of the oil drop in the urine is noted.

If the oil drop,

1. Spreads like a snake, it indicates vatha disease
2. Spreads like a ring, it indicates pitha disease
3. Appears like a pearl, it indicates kaba disease.

**In saganavatham the following vayus are affected.**

<b>Vatham</b>	<b>Physiological function</b>	<b>Feature in Saganavatham</b>
Abanan	Act with downward movement	Constipation present
Viyanan	Helps in various movements of body, responsible for sensation	Restricted neck movements Radiating pain in shoulder and arm, tingling sensation
Samanan	Regulates all other vayus	Affected
Nagan	Responsible for intelligence Helps in opening and closing of eyes	Sluggishness and depressive mood in aged patients.
Koorman	Responsible for lacrimation. Helps in visualization of all things of world	In aged patients acuity of vision is diminished.
Thevathathan	Responsible for laziness, rotation of eye balls	Sleeplessness due to pain

## **Pitham**

Pitham is a force of heat, God to all disease, mother to dasha vayukkal, assistant to boothas and responsible for fever.

Anar pitham	Digests all the ingested particles	Affected
Ranjaga pitham	Increase the blood and gives colours to blood	Affected
Saathaga pitham	Makes the work to complete what mind thinks to do	Affected. Neck pain and restricted movement
Aalosaga pitham	Responsible for vision of eyes	Affected in old age people
Prasaga pitham	Gives colours to skin	Not affected.

## **Kabam**

It is classified into five types

Avalampagam	Controls other 4 types of kabam	Affected
Kilethagam	Moistness the food	Affected
Pothagam	Helps to know the taste	Not affected
Tharpagam	Gives cooling affect to the eyes	Affected. Burning sensation of eyes present
Santhigam	Gives lubrication of joint	Affected

## Udal Thathukkal

There are seven udal thathukkal in human body.

Saram	Strengthens the body and mind	Affected
Seneer	Preserves brightness, boldness power and knowledge	Affected
Oon	Gives structure and shape to body. Responsible for movement	Early stage – not affected. Later stage – Affected
Kozhuppu	Lubricate the joints	Affected
Enbu	Responsible to joint movement	Affected
Moolai	It is present in the bones and gives strength	Affected
Sukkilam or Suronitham	Meant for reproduction	Not Affected

## Kanmenthiriyam

Kai	Works done by the hands	Affected. Radiating pain tingling sensation
Kaal	For walking	Not affected
Vaai	For speaking	Not Affected
Eruvai	For defecation	Affected
Karuvai	For reproduction	Not Affected

## **Gnanainthriyam**

Mei	Feels the sensation of touch	Affected paresthesia, present in upper limb. Radiating pain tingling sensation
Naa	Analyses taste	Not Affected
Kan	For vision	Not Affected
Mooku	For smell	Not Affected
Sevi	For hearing	Not Affected

### **Alteration of Udal Vanmai:**

Udal vanmai is described as Iyarkai vanmai, cheyarkai vanmai and kaala vanmai.

1. Iyarkai Vanmai is considered with three Gunangal (Sathuva, Raso and Thamo Gunam)

2. Kaala Vanmai is considered with Age and Season. Most of the vatha diseases occur in old age because the kaala vanmai is diminished in old age.

3. Changes in cheyarkai Vanmai also plays a major role. Wrong postures, sedentary life style and improper foods, disturb cheyarkai vanmai and causes the Sagana vatham.



## **THINAIGAL:**

Nilam is classified into five types. They are

1. Kurinji : Mountain and its surroundings. Kabanoigal and liver diseases are common
2. Mullai : Forest and its surroundings, pitha noigal, vatha noigal, liver diseases are common
3. Marutham : Field and its surroundings safest place to maintain good health.
4. Neidhal : Sea and its surrounding, Vatha diseases and liver enlargements are common.
5. Paalai : Desert and its surroundings, Vatha, Pitha and kaba noigal are common.

Study of five lands is very much needed, as some diseases are common in the particular lands.

In case of **Sagana vatham** most of the patients were from marutha nilam

**Paruvakaalam:**

The whole years is constituted by six seasons. They are

S. No.	Kalam	Kuttram	State of kuttram	Suvai
1	Kaar kaalam (Aavani – Puratasi) (Aug 16 – Oct 15)	Vatham ↑↑ Pitham ↑	Vettrunilai Valarchi Thannilai valarchi	Enippu Pulippu Uppu
2	Koothir kaalam (Iypasi – karthigai) (Oct 16 – Dec 15)	Vatham (–) Pitham ↑↑	Thannilai adaithal Vettrunilai valarchi	Enippu Kaippu Thuvarppu
3	Munpani kaalam (Markazhi – Thai) (Dec 16 – Feb 15)	Pitham (–)	Thannilai Adaithal	Enippu Pulippu Uppu
4	Pinpani kaalam (Masi – Panguni) (Feb 16 – Apr 15)	Kabam ↑	Thannilai valarchi	Enippu Pulippu Thuvarppu
5	Elavenil kaalam (Chithirai – Vaikasi) ( apr 16 – Jun 15)	Kabam ↑↑	Vettrumilai valarchi	Kaippu Karppu Thuvarppu
6	Mudhuvenil kaalam (Aani – Aadi) (Jun 16 – Aug 15)	Vatham ↑ Kabam (–)	Thannilai valarchi Thannilai Adaithal	Enippu

↑ - Valarchi

↓ - Samappaduthal

(–) - Thannilai Adaithal

In **Sagana vatham** the disease show its exacerbation during Muthuvenil kaalam

### **Noi Kanippu Vivatham (Differential Diagnosis)**

There are certain other vatha noigal which resemble the clinical symptoms as Sagana Vatham. Sagana Vatham is differentiated from certain other conditions.

They are,

1. Pannikamba vatham
2. Kumba vatham
3. Pei vatham

#### **1. Pannikamba vatham**

“மர்க்கமாய் வாய்வுமாய் மெய்நிறைந்து  
வயிறுதனிற் பசியிலா தூணுமற்று  
மர்க்கமாய் ஞாலத்து நடக்கையற்று  
நடுக்கமாய் கையிரண்டுத் திமிருண்டால்  
ஊர்க்கமாயுறக்கமில்லா துணர்ச்சியற்று  
உதறியே சரீரம் எங்கும் உலர்ந்து கண்ணும்  
பர்க்கமாய் வாய்விட்டு அலர்த்தலாகும்  
பாணிக்கம்ப வாதத்தின் பாங்குதானே”.

The main clinical features are:

- Loss of sensation in both upper limb
- Numbness in upper limb
- Sleeplessness
- Anorexia
- Shivering of upper limbs

## 2. Kumba vatham

“நவிலவே தேளன் மீதுங் கரத்தின் மீது  
நலிந்து மெத்தவாகியே நசவுண்டாகும்  
கவிலவே கன்னமொடு நயனந்தானுங்  
கடுத்துமே விறுவிறுப்பு மெரிவும் காணும்  
துவிலவே துடிப்பாகுஞ் சிரசு தன்னிற்  
சுழற்றியே நாபிக்கீழ் வலியுமுண்டாகும்  
அவிலவே அடிநாக்கில் றழுன்றுகாணு  
மலருமே வரு கும்ப வாதந்தானே”

- யூகி வைத்திய சிந்தாமணி 800

The main clinical features are:

- Burning pain in shoulder and upper limbs
- Burning sensation in the cheek and eyes
- Twitching over the scalp
- Pain in the lower abdomen
- Glossitis

## 3. Pei Vatham

“பெற்றியாங் பெருமையாங் காலும் கையும்  
பெருவயிறு நெஞ்சோடு விரலு முக்கும்  
ஏற்றியா மெறி கழுத்து மெங்கும் பற்றி  
ஏக்கமாய் நொந்துவுடம் பெங்கும் வீங்கி  
உற்றியா முணவே திமிர்த்தெடுத்து  
உறுதியாய்ப் பிடிக்கவு மொணாமலாகுந்  
சத்தியாய் வாய்கசந்து மயக்க மாகுந்  
தரித்திட வெண்ணாது பேய் வாதந்தானே”

- யூகி வைத்திய சிந்தாமணி 800

The main clinical features are:

- Pain and swelling in neck, upper and lower limb
- Numbness in the neck and limbs
- Giddiness
- Swelling all over the body
- Vomiting
- Bitter taste in tongue

#### **LINE OF TREATMENT:**

According to the Siddha system line of treatment is divided in to three. They are,

1. Kaappu (Prevention)
2. Neekkam (Treatment)
3. Niraivu (Restoration)

#### **Kappu (Prevention)**

To prevent sagana vatham

1. Avoid take excess sour astringent and bitter taste foods.
2. Sleep without pillows.
3. Avoid holding neck in one position for a long period (watching TV)
4. To follow the Noi Anugavidhi” described as follows.

#### **நோயினி்றி வாழ வழிமுறைகள்:**

1. வெந்நீர், நீர் கலந்தமோர், நெய்யினை உருக்கி சாப்பிடவேண்டும்.
2. நாள் ஒன்றுக்கு இருமுறை மட்டும் உணவு உண்ண வேண்டும்.  
(பகல் அறுசுவை உணவு, இரவு சிற்றுண்டி)
3. முதல் நாள் சமைத்த உணவுகளை உண்ணக்கூடாது.

4. பெருந்தாகம் கொண்டாலும் உப்பு நீர் அருந்தக்கூடாது.
5. உணவு உண்டபின் சிறிது குறுநடை செல்ல வேண்டும்.
6. நன்கு புளித்த தயிர் உண்ணக்கூடாது
7. காலை இளம் வெயிலை தவிர்த்தல் நல்லது
8. மலம், சிறுநீர் ஆகியவற்றை அடைக்கக் கூடாது
9. பகல் உறக்கம் கொள்ளக்கூடாது

**கால ஒழுக்கம்:**

1. மூன்று நாட்களுக்கு ஒருமுறை கண்மை இடடுக் கொள்ள வேண்டும் (கரிசாலைமை)
2. நான்கு நாட்களுக்கு ஒரு முறை எண்ணெய் குளியல் வெந்நீரில் செய்து வெந்நீரையே அன்று அருந்த வேண்டும்.
3. ஏழு நாட்களுக்கு (வாரம்) ஒருமுறை முகச்சவரம் செய்ய வேண்டும்.
4. 45 நாட்களுக்கு ஒரு முறை நசிய மருந்து எடுத்துக் கொள்ள வேண்டும். (குப்பைமேனிச்சாறு, தும்பைச் சாறு),
5. 4 மாதத்திற்கு ஒரு முறை பேதிக்கு மருந்து எடுத்துக் கொள்ள வேண்டும்.
6. ஆறு மாதத்திற்கு ஒரு முறை வாந்தி மருந்து எடுத்துக் கொள்ள வேண்டும்.

**NEEKAM (TREATMENT):**

Since the siddha system of medicine is based on Mukkutra theory the treatment is mainly aimed in bringing the three athosas in to its equilibrium state.

1. To bring the three Dhosas in equilibrium
2. Purgative
3. Treatment of disease by internal, medicine external applications

4. Diet & Advices
5. Yoga Therapy
6. Thokkanam
7. Kanma neekkam

**i) Bring the Three Dhosas in equilibrium**

“முன்றிலென்று யர்ந்ததை முன்னறிந்து  
முந்தியதை யொழித்திட மருந்திடு  
தணியும் நோயின் தந்திரமிதுவே  
பேணிக்கணித்திடின் பிறவாய் பின்குணம்”

Since the siddha system of medicine is based on Mukkutra theory the treatment is mainly aimed in bringing the three athosas in to its equilibrium state.

**ii) Purgatives:**

Kalichal Maruthuvam (Purgation) corrects the vitiated vatham. The following vases reveal the importance of kalichal Maruthuvam.

“விரேசனத்தால் வாதம் தரவும்”

- |                          |               |
|--------------------------|---------------|
| i. Asta bairava Mathirai | - 3 to 4      |
| ii. Koda soori Mathirai  | - 2 to 3      |
| iii. Vellai Ennai        | - 10 to 20 ml |
| iv. Agasthiyar Kuzhambu  | - 100mg       |

**III. Internal Medicine:**

Aayilpattai Choornam – 1gm tds with Hot water,

**External applications:**

Kalappai kizhangu oil – 30ml (External)

#### iv) Pathiyam (Diet regimen)

Pathiyam which is peculiar to siddha system of medicine, is a medicinal advice which includes life style modification and dietary modification as per diseased condition.

“பத்தியத்தினாலே பலனுண்டாகும் மருந்து  
பத்தியங்கள் போனால் பலன் போகும் - பத்தியத்தில்  
பத்தியமே வெற்றி தரும் பண்டிதருக் காதலினாற்  
பத்தியமே வத்தியென்று பார்”

- தேரையர் வெண்பா பாடல் 449.

Proper dietetic regimen enhance the bio-available of the drug and are conducive to the maintenance of good health. If dietetic regimen is not followed, certain food may be incompatible and antagonize the drug effect and produce harmful effect to the body.

#### வாதரோகாரி வஸ்துகள்:

“செங்கழு நீர் கோட்டந்தேன் மிளகு நல்லெண்ணெய்  
தங்கி பெருங்காயந் தழுதாழை - யெங்கெங்குங்  
கூட்டு சிறு முத்துநெய் தேரதிலுமுந்திவைகள்  
வாட்டு மணிலத்தை மதி”

- பதார்த்த குண சிந்தாமணி

i.e. Root of water lily (pontederia Veginalis), costus root (costus speciosus), honey collected on branches of trees, black pepper (piper nigrum), gingelly oil, asofoetida, leaves of clerodendron phlomoides, castor oil, black gram etc, cure vatha disease.

#### கடும் பத்தியம் (Strict Pathiyam):

“கடுமையென்றிடு பத்தியம் முவர் வறுத்துண்டல்  
அடைவிலா மறுபத்தியத் துவர் வறுத்தருந்தல்  
கொடுமை செய் புளிதனைச் சுட்டுக் கூட்டி டலன்றிப்  
படியில் கத்தரி சிக்குரப் பிஞ்சினைப் பருகல்”

- சுந்தரானந்தர் ஆயுள்வேதப் பொது வட்சணம்



i.e, a small quantity of fried salt is added to cooked rice which is eaten after adding hot water. Burnt tamarind, unripe brinjal and drumstick are taken in the form of soup along with fried salt.

### **Kanma Neekam: (Expiation)**

Kanma being a cause of vatha disease, its remedial measures have been described below.

“வையடா செவ்வந்தி முளரிதானும்  
வாகான கிணறுகளும் சாலை சோலை  
செய்யடா தன்னைப் பேர லுருத்தா னென்று  
தெய்வதல மதில் வைத்துச் சாத்தாந் பூசை  
செய்யடா சிலபூசை விசேடவோமஞ்  
செகந்தனிலே மண்டலந்தான் வேதியிருக்கான்னஞ்  
செய்யடா நெய்விளக்கோ ராயிரந்தான்  
செயமாகச் செய்திடவே நிசமதாமே”

- அகத்தியர் கண்ம காண்டம், பாடல் 78

i.e., To expiate the misdeeds of the kanma, planting of young trees, establishing gardens, laying roads and pathways, digging wells and ponds for public use, constructing temples, donating ornaments to poor children must be done.

### **Niraivu (Restoration)**

The topic “Niraivu” deals about the description to avoid the recurring of the disease.

After the treatment efforts should be taken to clear the residual effects of the disease, to bring back the body condition of the patient to normal, this is treated as “Niraivu”

To follow all the preventive methods mentioned in the topic “Kappu” will give good result to the patients.

## **Application of Special medicine methods to the Disease Saganavatham**

All the wonders of modern science will not bring happiness, peace of mind, health or a long life. Although wonders have been achieved in our external environment – space travel, computers etc. our internal environment has been neglected. In the manner of rectifying this negligence and also as an immediate and preventive cure for saganavatham patients in our sirappu maruthuvam branch, the author have explained yogas.

### **Yoga:**

Yoga is a science of consiousness. It unites the mind, body and soul. Yoga offers a significant variety of proven health benefits. The yoga for health aims at the maintenance of highest physical efficiency, purification and relaxation of all organs, removal of diseases, longevity and moral mental perfection.

The classic yoga, commonly known as the eight – fold path (Ashtanga Yoga). The eight steps are,

“இயம நியமமே எண்ணிலா ஆதனம்  
நயமுறு பிராணா யாமம்பிரத தியாகரஞ்  
சயமிகு தாரணை தியானஞ் சமரதி  
அயமுறும் அட்டாங்க மாவது மரமே”

- |           |   |   |
|-----------|---|---|
| Iyama     | : | Conditioned yoga behaviour, both personal and social. |
| Niyama    | : | Attitude sublimated to yoga norms.                    |
| Asanas    | : | Discipline of the physical body                       |
| Pranayama | : | Control over bioenergy through respiratory action     |

Prathyahara :	Withdrawal of the senses inwards through abstraction.
Dharana :	Concentration
Dhyana :	Meditation
Samathi :	Consciousness absolute or transconsciousness

**- Pandit shambhu nath**

## **ASANAS**

Asanas are postures, which are performed by the physical body with the involvement of breath, the mind and the intelligence and these asanas help in balancing and harmonizing the basic structure of the human body.

Our Siddhars were well aware of the importance of the spine in relation to disease. Hence they explained many asanas and postures which were designed to make the spine more flexible to prevent spinal misalignment and some may correct minor spinal misalignments. The author had explained about few asanas for Saganvatham patient as a preventive cure.

1. Bujangasanam
2. Shalabhasanam
3. Makrasanam
4. Konasanam
5. Pavana muktasanam (Without lifting up the neck)
6. Tadasanam
7. Chakrasanam
8. Dhanurasanam
9. Patchimothasanam
10. Gomugasanam

**Procedures of few asanas:****Bujangasanam (Snake pose)**

Final position resembles hooded snake.

**Posture:**

Lie flat with legs fully stretched out. Raise the upper portion of the body while breathing in.

**Benefits:**

- Adjusts minor displacement of the vertebra.
- Tones the deep muscles supporting the spinal column.
- Promotes spinal circulation.

**Patchimothasanam****Posture:**

In sitting position stretch out legs in front with feet together without bending the knees. Bend trunk and head slowly forward towards the knee while breathing out.

**Benefits:**

- Maximum posterior stretch of spine.
- Good for stiff spine
- Tones spinal muscles and nerves and improves considerably.

**Chakrasanam: (The wheel pose)**

Stand with feet apart, raise arms upward and first lean backward with inhalation and then bend forward from the waist with exhalation.

**Benefits:**

- Exercise of neck and shoulders
- To relieve neck pain.

**Vakrasanam:**

Sit with legs stretched forward, with arms thrown in front, rotate sideways alternately while exhaling

**Benefits:**

- Gentle twist of spine
- Removal of minor displacements of vertebrae
- Removal of lateral curvatures of spine

How Asanas relief the pain in Saganavatham Patients?

**1. Effect on Vertebral Muscle:**

Asanas dampens the inflow of sensory impulses to the brain, which causes less stimulation to the emotional brain. (Limbic cortex, Hypothalamus, Anterior pituitary and their connectives with Adrenal glands). Therefore, there are loss visceral disturbances to disturb attention and concentration. The reduction of sensory input creates a reciprocal chain, relaxing the muscle. Inhibition of synapses at the relaxed neuro muscular junctions in turn reduces the sensory input further. Thus asanas made musculature of vertebrae as relaxed as possible.

**2. Effects on tendons and ligaments:**

The accentuated curve of the spine makes it supply and mobile. The action on the ligaments and tendons of the spine has important effects on the nervous activity.

**3. Effects on Nervous System:**

Acts on the spine by stretching it, generates reflex actions in the vegetative functions and tones the chains of ganglions situated on both sides of the spine.

## **MUDRA**

Mudra is a hand gesture (or) position of body which is a symbol of energy centre. Mudra is a medium of communication of pranic energy and balancer of five elements. It brings harmony between conscious and sub conscious mind.

### **Importance of mudras:**

- Mudra is a switch board of the body
- Chakras are activated by mudras
- Give the body energy
- Mudras control tridosas – vatha, pitha and kabha.
- Mudras purify the nerves, leads to knowledge, energy and joy of consciousness.

The author had explained about few mudras for saganavatham patient as a preventive cure.

1. Vayu mudra
2. Pankaj mudra

### **i. Vayu mudra:**

It can be performed in any pose but vajrasana is the best asana for it, keep spine erect. Bend the fore finger (index / tarjani) and put it at the base of the thumb. Press the finger with the thumb. Duration is 48 minutes. Do it according to your capacity.

### **Benefits:**

- Pain in the neck can be removed
- Unsteadiness of mind is removed
- It cures the impurities in the blood circulation.

**Pankaj Mudra:**

Pankaj means lotus. Lotus is the symbol of purity and non attachment. Keep the fingers like lotus. In this mudra both the thumbs and little fingers touch each other.

**Benefits:**

- Makes spine healthy
- Makes nervous system stronger

**THOKKANAM (MASSAGE)**

Thokkanam is a systemic manipulation of the body parts by the physician (or) the physiotherapist.

“தெரக்கணத்தி னளவிரத்தந் தேரல் ஊணிவைகட்டு  
மிக்க சவுக்கியஞ் சமீரனும் பேரம் - மெய்க்கதிக  
புட்டியுறக்கம் புணர்ச்சியிவை கதிக்கும்  
பட்ட அலைச்சலறும் பரர்”

- தேரன் தரு

Thokkanam acts directly on vascular system, nervous system, lymphatic system and musculo system and brings the affected body to normal condition physically and mentally. It also gives a sense of well being, gives a good sleeps and increase the vital power and also provides relaxation.

**Benefits of Massage:**

- Besides being physically and emotionally relaxine.
- Improves blood and lymph circulation.
- Reduces nerve irritation.

- Swelling and thickening of tissues are reduced.
- Brings fresh oxygen and other nutrients to the affected tissues.
- Massage may also cause the body to produce fewer stress hormones like cortisol and nor-epinephrine (Formerly adrenalin), and may also increase the body's production of pain killing endorphins, and the need altering hormone serotonin.

**Among 9 types of thokkanam,**

**Effleurage (பிடித்தல்):**

Starts from the sides of the neck to supraclavicular area

Back of neck to supra clavicular area

Back of neck to the medial angle of the scapula to the axilla.

**Kneading (பிசைதல்):**

Finger pads are used on the posterior aspect from the occiput.

On the lateral aspect of the neck the fronts of the two distal phalanges of all four fingers are used.

Flat handled kneading in upper thoracic area.

**Picking up (அழுத்துதல்):**

The lower parts of the upper fibres of trapezius are compressed against the underlying bone.

**Wringing (முறுக்கல்):**

Done for sternocleidomastoid muscle

**Scapula rolling:**

The deep scapular muscles are intermittently compressed against the rib cage with potentials.



## **Hacking and clapping:**

Start from occiput to lateral part of the shoulder.

How massages reduce cervical spondylotic pain?

Reflex in which peripheral central portions of the nervous system both cerebral spinal and sympathetic are chiefly active, an impression made upon the nerve ends of the sensory (or) afferent fibres, (this is area, the nerve is pinched where it leaves the spine) connected with the nerve centres of the cerebrospinal and sympathetic system being transmitted to the related centers, where new activities are set up resulting in the sending out of nerve impulse by which vital changes are effected not only on the parts directly acted upon but in related parts also.

## **PRANAYAMA**

### **PRANAYAMA – PRAN + AYAMA**

PRANA - Means bioenergy

IYAMA - Means control (or) discipline.

The real meaning of pranayama, therefore, is control of bioenergy.

“ஏற்றி இறக்கி இருகாலும் பூரிக்கும்  
காற்றை பிடிக்கும் கணக்கறி வாரில்லை  
காற்றை பிடிக்கும் கணக்கறி வாளர்க்கு  
கற்றை உதைக்கும் குறியது வாமே”

- திருமந்திரம்

### **PRANAYAMA PRACTICES CAN HELP IN MANY WAYS:**

- To develop the respiratory organs and to improve your vital capacity.
- To aid the circulation of the blood.

- Helps in steadiness of the mind and in concentration.

In our siddha system various type of pranayama are explained by our siddhars. Specific type of pranayama which shows positive relief in

**Saganavatham Patients is.**

1. Deep breathing
2. Auloma viloma pranayama
3. Bhramari pranayama

- Dr.V.K. Ahluwalia.

## **Exercises advised for Sagana vatham**

### **1) Neck Bending**

#### **a) Starting Position**

- Sit with both legs straight.
- Place the palms on the floor by the side of the buttocks
- Keep the back, neck and head straight
- Close the eyes
- This is Dandasana

#### **b) Practice**

##### **Stage – I (Forward – Backward Movement)**

- Slowly move the head forward and try to touch the chin to chest.
- Then move the head as far back as comfortable.
- Try to feel the stretch of the muscles in front and back of the neck and the loosening of the spine in the neck.
- Practice 10 times.
- Inhale on the backward movement and exhale on the forward movement.

### **Stage –II (Bending to Right and Left)**

- Close the eyes and face directly forward.
- Slowly bend the head to the right and ear coming to the shoulder turning the head or lifting the shoulder.
- Bring the head back to the normal position
- Then bend in to the left side and try to touch the left ear to the left shoulder in the same fashion. Lift the head to the centre
- This is one round. Practice 10 rounds
- Inhale on the upward movement and exhale on the downward movement.

### **Stage –III (Turning the head to Right and Left)**

- Keep the head upright and eyes closed.
- Gently turn the head to the right so that the chin is in line with the shoulder.
- Slowly turn the head to the left through the centre till the chin is in line with the shoulder. Bring the head to centre.
- This is one round. Practice 10 rounds.
- Inhale while turning to the front. Exhale while turning to sides.

### **c) Note : (For all the three stages)**

- Move the head as far as comfortable. Do not strain
- Keep the shoulders relaxed and unmoved
- Feel the release of tension in the neck muscles and the shoulder muscles.

### **Contra – Indications**

- Should not be performed extreme positions by elderly people
- Cervical spondylosis cases to avoid during acute pain

## **Benefits**

- These asanas release tension (accumulated especially after prolonged work at a desk) and also heaviness and stiffness in the head, neck and shoulder region.

## **Additional points to Note**

- Make the movements cautiously and slowly when there is Neck pain.
- Practice them with normal breathing
- Hold the neck in the final positions for a few moments
- If you have pain at any stage, stop in that position for a while. As you bring your complete awareness to the area of pain, start breathing consciously and deeply, then continue the movement.
- It can be practiced even while standing in Tadasana or sitting on a chair, or in Vajrasana.

## **2. Neck Rotation**

### **a) Starting Position**

Sit in Dandasana

### **b) Practice**

#### **Stage –I (Half Rotation)**

- Relax the head bending forward
- Bring the right ear to the right shoulder in a circular way.
- Bring the left ear to the left shoulder in a circular bending the head forward.
- Now relax the head forward again in a circular way and finally lift the head to normal position. This is one round.
- Repeat 10 rounds clockwise and 10 rounds anti – clockwise with breathing.

### **Stage -11 (Full Rotation)**

- Relax the head forward trying to touch the chin to the chest.
- Slowly rotate the head in as large a circle as possible, keeping the chin tucked in.
- Practice 10 rounds clockwise and 10 rounds anti- clockwise while breathing normally.

#### **A) Note**

- In both cases (Half and full Rotations) you may take about one minute or even longer for one cycle. Allow normal breathing without trying to synchronise the breath & neck movements.
- In full rotation, try to make the circle bigger and bigger.
- Keep the eyes closed throughout the practice
- Feel the shifting stretch around the neck and loosening up of the joints and muscles of the neck.
- Practice full rotation very carefully. Start with half rotation and then go for full rotation.
- If there is pain in any position, hold the head in that position. Become aware of the point or area of pain and start breathing consciously and deeply. This will relieve you of pain and then you can continue.
- Can be practiced in cross – legged sitting position, or sitting on a chair.

#### **Contra – indications**

- Should be performed carefully by elderly people
- Cervical spondylosis cases to avoid during acute pain

## **TRAUMATOLOGICAL ASPECTS OF CERVICAL SPONDYLOSIS AND RELATED VARMA DISEASES**

A slight misalignment of a vertebra, which impinges on the nerve, that travels to that particular organ. This cause interference to the life forces [nerve impulse] to the organ. As a result, the organ cannot function at its optimum level. If the spinal misalignment is not corrected to organ may develop pathology.

In our Siddha system, Siddhars explained these words as Varma diseases, results from derrangments of varma areas around cervical spine, which is given later.

The traumatological cervical disc lesion (Acute cervical disc lesions) may grouped under two categories:

- a) Occurs in normal spine, as the result of sports injury in a young person.
- b) Occurs in a person who already has an abnormal neck due to cervical spondylosis. For this patient sudden flexion or extension of the neck may lead to the symptoms of disc herniation.

### **What is varma?**

A varma points is a place where the life forces is acting. If it is hurt in a particular manner and with forces, signs and symptoms develop according to the site of the point. If these signs and symptoms are not set right within the stipulated period death will occur. So these varma emergencies which can be called as orthopaedic emergencies according to recent medical science.

According to sites and symptoms, the author had given 3 Varmas.

### **Pinnuvathi Varmam:**

“..பின் தலையில் பொருத்தில் தானே  
பின்னுவாதி என்றதற்கு பேரு.....  
.....  
மையமாகும் இத்தலத்திலடியகன் கொண்டால்  
மயங்கிடாது போதமுண்டாம்  
அப்பனே தரிப்புடன் உளைச்சல் குத்து  
சகிக் கொணாது தலைசுற்றி வலிக்கும்பபா  
பிடரி நோயாம்.....”

“ஓராண்டு கழிந்த பின்பு  
பிடரி என்ற நரம்பிதிலே நீரிறங்கி தரிப்புண்டாகும்  
ஆகும்பா குறுக்கதிலே நோயுண்டாகி  
கைதனிலே வாத நீர் வந்திறங்கும் பாரே”.

### **Mimic Features:**

Giddiness

Pain in the cervical region

Pain in the shoulder and upper limb after one year

### **Site of Varmam:**

பின் தலை பொருத்து (Atlanto occipital Joint)

### **Suzhiyaadi Varmam:**

“வளமான சுழியாடி வர்மம் கேளு  
துகையுடனே பிடரி பெரு நரம்புக்கு மேல்  
முடி முடிந்த குழிவதிலே சுழியாடி வர்மம்  
அப்பனே இத்தலத்தில் குத்திடிகள் ஊக்கம் கொண்டால்  
ததொடனே கைஇ காலும் குளிர்ந்து போகும்  
வாய்பிளக்கும் சடுதியிலே மரணம் வந்து சாவார்”

**Site of Varmam:**

முடி முடிந்த குழிவு (Atlanto occipital joint)

**Mimic Features**

Quadriperesis

**3. Vilangu Varmam:**

When vilangu varmam is injured it leads to symptoms of saganavatham. The symptoms are pain in cervical region, pain in the shoulder and upper chest, difficulty in lifting the corresponding upper limb. This should be differentiated from the saganavatham. The verse for vilangu varmam is as follows.

"அலவாடி வர்மத்தின தாழே  
காரைஎல்லுக்குள்ளே விலங்கு வர்மம்  
விலங்கு வர்மம் கொண்டால் குணத்தைக் கேளு  
கையதினே வசத் தொடமல்  
நெஞ்சுள்ளே கொழுத்திக் கொள்ளும்  
காரை எல்லுக்குள்ளே வுனைச்சல் குத்தும்  
தலை தன்னை நிமிர்வொட்டாமல்  
குறுக்கேகேடே கொழுத்திக் கொள்ளும்"

- வர்ம ஆணி



# **MODERN ASPECTS**

## **THE ANATOMY**

### **The Vertebral Column:**

The Vertebral column forms a pillar in the midline of the dorsum of the body, lodges and protects the spinal cord and its meninges in a canal within it called the vertebral canal. It contains 33 segments and length about 70 cm in an average male and 60 cm in a female. It supports the body weight and transmits it to the ground through the lower limbs.

The segments can be divided into cervical, thoracic, lumbar, sacral and coccygeal segments.

The cervical segment has seven vertebral bones, thoracic twelve, lumbar five, sacral five and coccygeal four. All are separate bones except the sacrum and coccyx.

### **The Curvatures of the Spine:**

There are four curvatures in the vertebral column. They are two primary and two secondary curvatures.

The primary curvatures are the thoracic and the sacral. They are convex posteriorly. The secondary curvatures are the cervical and lumbar. They are anteriorly convex. The cervical curvature becomes prominent when the child is able to hold its head up and sit upright. The lumbar curvature appears by 12 -18 months after the child starts walking. A slight lateral curvature is seen in the upper thoracic region. It is curved to the right in right handed persons and vice versa.

### **The General features of the vertebrae:**

The vertebrae can be divided into vertebral body and a dorsal vertebral arch. The vertebral arch has 2 pedicles, 7 processes and 2 laminae. Pedicles are thick bars projecting backward from the body. The laminae are vertical plate like structures, fuses together to form spinous process. The spinous process projects downwards and is the lever for the muscles. The articular processes are four in number, bearing the articular facets and articulate with the adjacent vertebrae. Transverse processes project laterally from the junction of pedicle and laminae. In thoracic region they articulate with ribs.

### **Inter-Vertebral Discs:**

They are fibro cartilagenous discs interposed between the adjacent surface of the vertebral bodies. They are thicker in lumbar region than in thoracic. Their peripheral parts are supplied by the adjacent blood vessels but the central parts are avascular. They receive their nutrients by diffusion from spongy bone of adjacent vertebrae.

The ventral portion of disc is known as **Nucleus pulposus** and the peripheral zone is known as **Annulus Fibrosus**. The central portion is made up of gelatinous mucoid material. On going it is converted into fibro cartilagenous material and its water binding capacity is reduced. The annular fibrosus contains collagen bundle in the periphery and fibro cartilagenous tissue in the inner part.

The thickness of the discs varies daily. In the morning it is thick due to absorption of fluids in lying posture during night and it is thin at night.

**Uses:**

They absorb shock and allow easy movements of the vertebral column.

**The cervical Vertebrae:**

The cervical segment of vertebral column contains 7 vertebrae. The first, second and the seventh are atypical and the third to sixth are typical. They are smaller and delicate than the thoracic and lumbar vertebrae. All the cervical vertebrae have a foramen in the transverse process known as foramen transversarium. This is identical to the cervical vertebrae.

**Typical Cervical Vertebrae:****1. Body:**

It is small and oval. Its superior surface is concave transversely with upward projecting lips on each side and its inferior surface is saddle shaped, convex from side to side and concave from before backwards.

**2. Vertebral Foramen:**

It is larger than the body and triangular in shape because the pedicles are directed backwards and laterally

**3. Vertebral Arch:****i) Pedicles:**

These are short and directed outwards and backwards from the middle of postero lateral parts of the body and they form the postero medial wall of the foramen transversarium.

**ii) Laminae:**

These are long and narrow, being thinner above than below.

### **iii) Articular Facets:**

The superior and inferior articular processes form the articular pillars which project laterally at the junction of the pedicle and the lamina. The superior articular facets are flat and directed backwards and upwards. The inferior articular facets are also flat but directed forwards and downwards.

### **v) The Spine:**

It is short and bifid.

### **Foramen Transversorium:**

It transmits the vertebral artery, vertebral veins and sympathetic plexus.

### **The Atypical Cervical Vertebrae:**

#### **1. Atlas:**

It is the first cervical vertebrae which lodges the skull. It has no body and spine. It has anterior and posterior arch, right and left lateral masses and transverse processes.

The anterior arch bears an anterior tubercle in the anterior aspect. Its posterior aspect bears an oval facet which articulates with dens. The posterior surface of the posterior arch has a median posterior tubercle. The two lateral masses bear an elongated superior articular facet for atlanto-occipital joint and an inferior articular facet for atlanto axial joint.

#### **2. The Axis:**

The Axis has a peg like projection in its upper part of the body known as the dens (or) odontoid process. It has circular facet anteriorly articulating with atlas. There are two articular facets on either side of the

dens on the upper surface of the body. The laminae are thick. The spine is large and bifid. The transverse process is small and possesses a tubercle in its tip.

### **3. The Seventh Cervical Vertebrae:**

It is also known as the “Vertebral Prominent”. The transverse process does not possess anterior tubercle. The foramen transversarium is small (or) absent. It transmits accessory vertebral vein only. The spine is long.

### **Palpable parts of Cervical Vertebrae:**

1. The spine of C<sub>2</sub> is in the nape of the neck 5 cm below the external occipital protuberance.
2. The spine of C<sub>7</sub> where the collar bone crosses the posterior midline of the neck.
3. The transverse process of C<sub>1</sub> through the anterior border of sternocleidomastoid, immediately below the tip of the mastoid process.

### **Joints of the Vertebral Column:**

The vertebrae from the 2<sup>nd</sup> cervical to 1<sup>st</sup> sacral are articulated to one another by a series of cartilaginous joints between vertebral bodies and a series of synovial joints between the vertebral arches. The vertebral bodies are united by anterior posterior longitudinal ligaments and vertebral disc of fibrocartilage.

## **1. Atlanto Occipital Joint:**

It is a synovial condyloid variety.

### **Articular ends:**

Superiorly - Occipital condyles.

Inferiorly - Superior articular facet of the atlas. Ligaments, joints capsule, anterior and posterior occipital membranes.

Blood supply - Vertebral artery

Nerve supply - First cervical nerve

### **Ligaments:**

1. Capsular ligament.
2. The Anterior Atlanto-occipital membrane.
3. The posterior Atlanto-occipital membrane.

### **Movements:**

Flexion, extension and slight lateral flexion are possible.

## **2. Atlanto Axial Joint:**

Comprise of

1. A pair of lateral atlanto-axial joints.
2. Median atlanto-axial joints.

### **Articular ends:**

Inferior facets of atlas and the superior facets of axis.

### **Ligaments:**

1. Capsular ligament.
2. Longitudinal ligament.
3. Cruciform ligament.

**Movement:**

Rotatory movements around a vertical axis occur in this joint.

**Ligaments between axis and the occipital bone:**

1. Membrana tectoria
2. Cruciate ligament
3. Apical ligament of dens
4. Linear ligament

**The Unco Vertebral (Luschka's) Joints:**

Luschka's joints are not true synovial joint, which develop as a result of degenerative changes in the edges of the disc in early adult.

Luschka's joints are important, because

1. They are the commonest site of osteophyte formation.
2. The osteophytes may compress the cervical nerves.

**Blood supply of Vertebral Column:**

The vertebrae and longitudinal muscles attached to them are supplied by segmental arteries. The arteries give multiple small branches to the vertebral bodies. The extensor muscles of the neck are supplied by the occipital, the deep cervical and the transverse cervical arteries.

**Venous Drainage:**

The Internal vertebral venous plexus lies within the vertebral canal, but outside the spinal dura. It received tributaries from

- (i) The vertebrae through the basilo vertebral veins.
- (ii) The meninges and the spinal cord.

The internal vertebral venous plexus is drained by the intervertebral veins, which pass out through the inter vertebral foramen.

Here they are joined by the tributaries from the external vertebral and sacral veins. About the internal venous plexus communicates with the occipital and basilar veins through the foramen magnum.

### **Movements of the Vertebral Column:**

The greater thickness of the discs in the cervical and lumbar regions as compared with the thoracic region is associated with the greater individual range of movements occurring in those regions.

Flexion (or) forward bending, extension (or) backward bending, lateral flexion and rotation are possible in vertebral column.

### **Movements of the Head and Neck:**

<b>Movements</b>	<b>Muscles</b>	<b>Nerve Supply</b>
Flexion	Sternocleidomastoid	Accessory ventral rami of cervical spinal nerves C <sub>2</sub> , C <sub>3</sub> , C <sub>4</sub> .
	Longus Coli	Cervical ventral rami C <sub>2</sub> – C <sub>6</sub> .
	Longus Capitis	Cervical ventral rami C <sub>1</sub> – C <sub>3</sub>
	Rectus capitis Anterior	C <sub>1</sub> ventral ramus
Extension	Splenius cervicis and capitis	Dorsal cervical nerve
	Erector spinae	Dorsal rami
	Rectus capitis posterior major and minor	Dorsal rami C <sub>1</sub>
	Oblique capitis Superior	C <sub>1</sub> – Dorsal ramus
	Trapezius	Accessory



Lateral flexion and rotation	Sternocleido mastoid	Accessory, ventral rami of cervical spinal nerves C <sub>2</sub> , C <sub>3</sub> , C <sub>4</sub> .
	Scalene	Cervical ventral rami C <sub>3</sub> – C <sub>8</sub>
	Longus Coli	Cervical ventral rami C <sub>3</sub> – C <sub>8</sub>
	Levator scapulae	Cervical ventral rami C <sub>3</sub> , C <sub>4</sub> , C <sub>5</sub>
	Rectus capitis	C <sub>1</sub> – ventral ramus
	Splenius	Cervical dorsal ramus
	Longismus oblique capitis superior and inferior	C <sub>1</sub> Dorsal ramus.

## **SPINAL CORD**

The spinal cord is an elongated, cylindrical part of the central nervous system, occupying the superior two thirds of the vertebral canal. It extends from the level of the upper border of the atlas to the lower border of the vertebra L<sub>1</sub> (or) the upper of the vertebra L<sub>2</sub>. The lower end is conical and is called as conus medullaris. The apex of the conus is continued down as the filum terminale. Along its length, the cord presents, two thickenings, the cervical and lumbar enlargements which give rise to nerves for the limbs. The spinal cord gives off 31 pairs of spinal nerves.

### **The meninges of the Spinal Cord:**

The spinal cord is covered by three membranes like the brain and is called as meninges. They are

#### **1. Dura Mater:**

The outer most covering is thick opaque, vascular layer and it is continuous with the inner meningeal layer of dura mater of the brain. This is attached anteriorly with the posterior surface of the bodies of C<sub>2</sub> and C<sub>3</sub> and posteriorly with longitudinal ligament. Laterally it is pierced by spinal nerves.

#### **2. Arachnoid Mater:**

It lies between duramater and Piamater and is avascular, transparent membrane. It is continuous with the arachnoid mater of the brain and ends in second sacral level. The sub arachnoid space contains cerebrospinal fluid (CSF).

### **3. Pia Mater:**

This transparent vascular membrane lies as an innermost layer and is the continuation of pia mater of brain. But it is thicker than pia mater of brain.

#### **External Features:**

The surface of spinal cord presents an antero median fissure, a postero median sulcus and a pair of antero lateral and postero lateral sulci. The posterior nerve roots are attached to the posterior sulci and anterior nerve roots emerge from antero lateral sulci. Continuous with the cord is a series of paired dorsal and ventral root of spinal nerves. Ventral spinal roots contain efferent somatic and efferent sympathetic nerve fibres at same levels. Efferent sympathetic nerve fibres are emerging from their spinal sources. Each ventral root emerges as a variable number of rootlets, which appear over an elongated vertical elliptical area.

Dorsal spinal roots have an ovoid swelling ganglia one on each root proximal to its junction with a ventral root in an intervertebral foramen. Each fans out into 6-8 rootlets entering the cord in a vertical row in the postero lateral sulcus. These are usually said to contain only afferent axons from unipolar neurons in spinal root ganglia.

The region of spinal cord associated with the emergence of a pair of nerves is a spinal segment, but there is no actual surface indication of segmentation. Recent researches show that ventral spinal nerve roots contain only one neuro mediator, Acetyl choline whereas dorsal root

contain atleast seven–Glutamate, Aspartate, substances P, VIP, CCK, somatostatin, Dynorphin, and Angiotensin II.

### **Internal Structure:**

When seen in transverse section, the grey mater of the spinal cord forms a ‘H’ shaped mass. In each half of the cord, the grey mater is divisible into

1. The anterior grey column (or horn) and
2. The Posterior grey column. In some part of the spinal cord, a small lateral grey column is also present.

The anterior horn contains motor cells and the posterior horn contains sensory cells. Central canal is situated in the central part of the cord and contains CSF. The lateral horn of spinal cord gives origin to sympathetic nervous system from the thoracic to lumbar regions.

The white mater of the spinal cord is divided into right and left halves in front by a deep anterior median fissure and behind by the posterior median septum. In each half of the white mater is divided into the posterior, lateral and anterior white column.

### **Blood Supply:**

The blood supply to the spinal cord is derived from the anterior and posterior branches of vertebral arteries and they are reinforced to form spinal twigs. The twig at the level of 1<sup>st</sup> and 11<sup>th</sup> thoracic is known as “Arteries of adam Kiewicks”.

The spinal twigs and radicular arteries are the important vascular supply of the cord.

**Venous drainage:**

There are 6 channels of veins are present around the cord. One pair is situated behind the each anterior & posterior nerve roots. The rest 2 channels are present in antero median fissure and posteromedian sulcus. They are drained into lateral sacral, lumbar, posterior intercostals veins.

**Spinal Nerves:**

There are 31 pairs of spinal nerves emerge from the cord. The part of the cord to which one pair of spinal nerve is attached is called spinal segment. The spinal cord is made of 8 cervical, 12 Thoracic, 5 lumbar, 5 sacral and 1 coccygeal segments.

**Cervical plexus:**

These are formed by the anterior rami of upper cervical nerves. Each nerve root divides into ascending & descending branch of another nerve and forms the plexus. The important branches, (1) transverse cutaneous nerve which supplies the skin in front of the neck, (2) Phrenic nerve which is a motor nerve to the diaphragm.

**Brachial Plexus:**

These are formed by anterior rami of the lower four cervical and anterior primary rami of the first thoracic.

The important branches are ulnar nerve from medial cord axillary & radial nerves from posterior cord.

## **NERVE AND ROOT SUPPLY OF MUSCLES**

### **UPPER LIMB**

### **SPINAL ROOT**

#### **SPINAL ACCESSORY NERVE**

Trapezius

C<sub>3</sub>C<sub>4</sub>

#### **BRANCHIAL PLEXUS**

Rhomboides

C<sub>4</sub>C<sub>5</sub>

Serratus anterior

C<sub>5</sub>C<sub>6</sub>C<sub>7</sub>

Pectoralis Major

Clavicular

C<sub>5</sub>C<sub>6</sub>

Sternal

C<sub>6</sub>C<sub>7</sub>C<sub>8</sub>

Supra Spinatus

C<sub>5</sub>C<sub>6</sub>

Infra Spinatus

C<sub>5</sub>C<sub>6</sub>

Latissimus Dorsi

C<sub>6</sub>C<sub>7</sub>C<sub>8</sub>

Teres Major

C<sub>5</sub>C<sub>6</sub>C<sub>7</sub>

#### **Axillary Nerve**

Deltoid

C<sub>5</sub>C<sub>6</sub>

#### **Musculo Cutaneous Nerves**

Biceps

C<sub>5</sub>C<sub>6</sub>

Brachialis

C<sub>5</sub>C<sub>6</sub>

#### **Radial Nerve**

Triceps

Long Head

Lateral Head

C<sub>6</sub>C<sub>7</sub>C<sub>8</sub>

Medial Head

Brachio radialis

C<sub>5</sub>C<sub>6</sub>

Extensor Carpi radialis longus

C<sub>5</sub>C<sub>6</sub>

**Posterior Interosseous Nerve**

Supinator	C <sub>6</sub> C <sub>7</sub>
Extensor Carpi Ulnaris	C <sub>7</sub> C <sub>8</sub>
Extensor digitorum	C <sub>7</sub> C <sub>8</sub>
Abductor pollicis Longus	C <sub>7</sub> C <sub>8</sub>
Extensor pollicis Longus	C <sub>7</sub> C <sub>8</sub>
Extensor pollicis brevis	C <sub>7</sub> C <sub>8</sub>
Extensor indicis	C <sub>7</sub> C <sub>8</sub>

**Median Nerve**

Pronator teres	C <sub>6</sub> C <sub>7</sub>
Flexor Carpi radialis	C <sub>6</sub> C <sub>7</sub>
Flexor digitorum superficialis	C <sub>7</sub> C <sub>8</sub> T <sub>1</sub>
Abductor pollicis brevis	C <sub>8</sub> T <sub>1</sub>
Flexor pollicis brevis	C <sub>8</sub> T <sub>1</sub>
Opponens pollicis	C <sub>8</sub> T <sub>1</sub>
Lumbricals I & II	C <sub>8</sub> T <sub>1</sub>

**Anterior Interosseous Nerve**

Flexor digitorum profundus I & II	C <sub>7</sub> C <sub>8</sub>
Flexor pollicis longus	C <sub>7</sub> C <sub>8</sub>

**Ulnar Nerve**

Flexor carpi ulnaris	C <sub>7</sub> C <sub>8</sub> T <sub>1</sub>
Flexor digitorum profundus III & IV	C <sub>7</sub> C <sub>8</sub>
Hypothenar muscle	C <sub>8</sub> T <sub>1</sub>
Abductor pollicis	C <sub>8</sub> T <sub>1</sub>
Flexor pollicis brevis	C <sub>8</sub> T <sub>1</sub>
Palmar interossei	C <sub>8</sub> T <sub>1</sub>
Dorsal interossei	C <sub>8</sub> T <sub>1</sub>
Lumbricals III & IV	C <sub>8</sub> T <sub>1</sub>

# CERVICAL SPONDYLOSIS

## Nomenclature:

Cervicco	-	Latin Word, Means neck
Spondylo	-	Greek Word, Means Vertebra
Osis	-	Condition

It is a type of pathological condition in cervical vertebra.

## Synonyms:

Cervical spondylotic Myelopathy	Burner syndrome
Cervical Osteoarthritis	Pinched syndrome
Cervical Radiculopathy	Cervical discogenic pain syndrome
Cervical osteophytic bars	Cervical Facet syndrome

## Definition:

Cervical spondylosis is a chronic degenerative condition of the cervical spine that affects the vertebral bodies and intervertebral discs of the neck as well as the contents of the spinal canal.

## Epidemiology:

1. It is the most common cause of spinal cord disturbances in patients older than 55 years.
2. X –Ray findings suggest that 90% of men older than 50 years and 90% women older than 60 years have evidence of degenerative changes in the cervical spine.
3. Both sexes are affected equally but problems begin earlier in males.



**Location:**

Generally the C5 & C6 roots are most commonly affected by cervical spondylosis as a result of the increased mobility at the C5 – C6 & C6 – C7 levels.

Acute disc lesions are seen most often at the C7 level followed by C6 level.

High level cervical disc involvements are very common.

**Mortality / Morbidity:**

The course of cervical spondylosis may be slow and prolonged and patients may either remain asymptomatic (or) have mild cervical pain.

Morbidity ranges from chronic neck pain, radicular pain, diminished cervical range of motion (ROM), headache, myelopathy leading to weakness and impaired fine motor coordination to quadri paresis and (or) sphincteric dysfunction.

**Etiology:**

Causes of this disorder are explained as follows.

**a. Degenerative Causes:**

They are primary & Secondary

- |           |   |                                       |
|-----------|---|---------------------------------------|
| Primary   | - | Senility                              |
|           |   | Genetic factors                       |
|           |   | Metabolic factors                     |
|           |   | Manual labour                         |
| Secondary | - | Osteo arthritis, Rheumatoid arthritis |
|           |   | Metastatic carcinoma                  |
|           |   | Lymphoma of spine                     |
|           |   | TB Spine                              |

**b. Injury**

- Automobile accidents with whiplash injury and athletic injury.
- Sudden Jerks on the arms during falling down.
- Previous injury with fracture or disc prolapsed.

**c. Occupational causes****d. Hereditary factors**

- Congenital narrowing of the cervical spinal canal.
- Segmental defects – Hemivertebra, Fused vertebra.
- Acquired narrowing of cervical spinal canal due to
  - Osteophytes
  - Ossified posterior longitudinal ligament (OPLL)
  - Facet joint hypertrophy (results foramina stenosis and compression of root of radicular artery)
  - Hypertrophied ligamentum flavum (Compress the cord during extension).

**Factors responsible for myelopathy in cervical spondylosis:**

1. Uncovertebral osteophytes cause anterior compression of cord.
2. Bony ridges on the posterior vertebral bodies cause central compression on the cord.
3. Zygapophyseal osteophytes causing posterior compression.
4. Development of narrow cervical canal.
5. Dynamic effect of narrowing of the cervical canal.
6. Calcification of the posterior longitudinal ligament.
7. Teethering of the roots to the osteophytes.
8. Arachnoiditis, postoperative scar.
9. Interference of blood supply to cord.

**Pathophysiology:**

Intervertebral discs lose hydration and elasticity with age and these leads to cracks and fissures. The surrounding ligaments also lose their elastic properties and develop traction spurs. As the disc space narrows, the annulus bulges, and facets override. This change, in turn, increases motion at that spinal segment and further hastens the damage to the disc. Annulus fissures and herniation may occur. Acute disc herniation may complicate chronic spondylotic changes.

As the annulus bulges, the cross – sectional area of the canal is narrowed. This effect may be accentuated by hypertrophy of the facet joints (posteriorly) and of the ligamentum flavum, which becomes thick with age. Neck extension causes the ligaments to fold inward, reducing the anteroposterior (AP) diameter of the spinal canal.

As disc degeneration occurs, the uncinate process overrides and hypertrophies, compromising the ventrolateral portion of the foramen. Facet hypertrophy decreases the dorsolateral aspect of the foramen. This change contributes to the radiculopathy that is associated with cervical spondylosis. Marginal osteophytes begin to develop. Additional stresses, such as trauma long term heavy use, may exacerbate this process. These osteophytes stabilize the vertebral bodies adjacent to the level of the degenerating disc and increase the weight bearing surface of the vertebral end plates.

Degeneration of the joint surfaces and ligaments decreases motion and can act as a limiting mechanism against further deterioration.

Thickening and ossification of the posterior longitudinal ligament (OPLL) also decreases the diameter of the canal.

The blood supply of the spinal cord is an important anatomic factor in the pathophysiology radicular arteries in the dural sleeves tolerates compression and repetitive minor trauma poorly.

**Pathology:**

Cervical spondylosis is very common and histological evidence of degenerative changes are present in virtually even present over the age of 70.

Osteophytes may form posteriorly with osteoarthritis of the apophyseal joints and also anteriorly in relation to degenerative changes and narrowing of the intervertebral disc with sclerosis of the bony end plates.

The osteophytes may cause symptoms by encroaching on the spinal nerve foramine (or) in the cervical region on the vertebral artery foramen. In the cervical region intermittent pain and discomfort may be followed eventually by stiffness and limitation of movements.

In cervical spondylosis, changes occur in the following structures.

- Intervertebral disc
- Uncovertebral
- Apophyseal joints
- The foramine (Intervertebral and transverse)

**Intervertebral Disc:**

All these parts of disc cartilage plate, nucleus and annulus are involved.

**Cartilage plate:**

First the cartilage plate thins out and cracks. Fissuring and erosion is common. The whole plate is replaced by fibrous tissue.

**Nucleus:**

Nucleus becomes fibrous with degeneration. The process of dehydration occurs and concludes with reduction in water binding mucoprotein.

**Annulus:**

Annulus undergoes some changes as in nucleus. Focal necrosis and calcification is common. They form hard ridge within the cervical canal.

**Uncovertebral joints:**

The uncovertebral joints are most affected at C5-C6 and C6 – C7 levels, progressive decrease in disc above the uncinate process approximates against the vertebral body undergoes erosion and formation of the osteophytes.

**Apophyseal joints:**

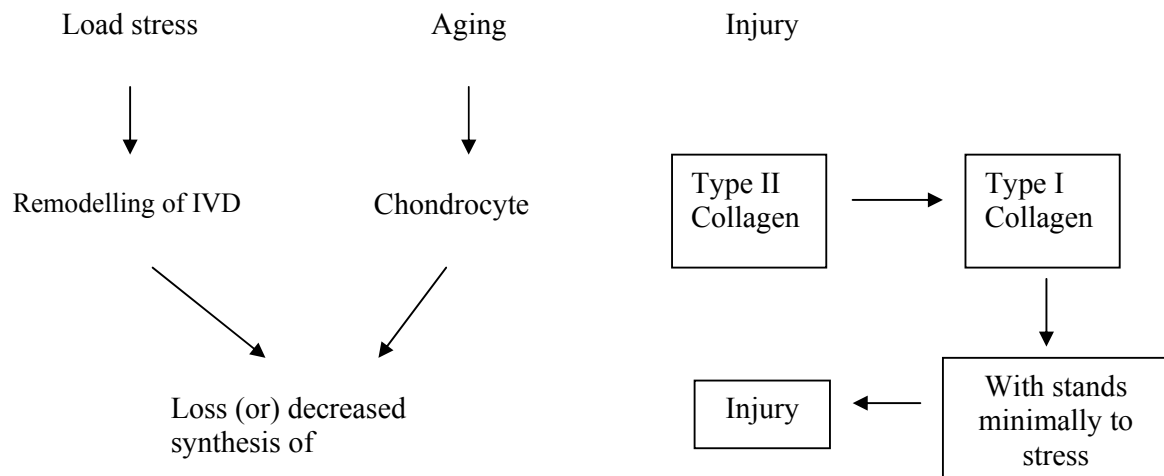
They may remain unaffected for long time. When they are subjected to heavy weight pathological changes like erosion, degeneration, lipping and osteophyte formation occurs.

**Microscopical changes:**

1. Demyelination most prominent in lateral column of level of osteophytic bars.
2. The medial portion of the long myelinated tracts is affected.
3. Loss of anterior horn cells
4. Central cavitation

5. Archnoiditis around nerve sleeve
6. Demyelinated plaques, swelling of myelion, axons, ganglia is found in the white matter.

### **Biochemical changes:**



The biochemical changes in IVD, due to the cumulative effect of injury, aging, load stress of chondrocytes diminishes the synthesis of proteoglycans, cathepsin and leads to the alteration in collages type II to type I. All causes are due to cartilage's injury.

### **Symptoms and signs:**

1. Pain in the neck, radiating to the shoulder blades, top of the shoulders, upper arms and hands (or) back of the head.
2. Crunching sounds with movement of neck (or) shoulder muscles.
3. Numbness and Tingling sensation in the arms, hands and fingers, some less of feeling in the hands and impairment of reflexes.
4. Muscle weakness and deterioration

5. Neck Stiffness.
6. Head ache
7. Dizziness and Unsteady gait
8. With advanced stages, loss of bladder control and leg weakness

**Common clinical syndromes associated with cervical spondylosis include the following:**

**i) Cervical pain:**

- Chronic suboccipital head ache may be present. Mechanism include direct nerve compression, degenerative disc, joint (or) ligamentous lesions and segmental instability.
- Pain may radiate to the occiput, shoulder, scapula (or) arm
- The pain, which is worse when the patient is in certain positions, can interfere with sleep.

**ii) Cervical radiculopathy:**

- Compression of cervical nerve roots leads to ischaemic changes that cause sensory dysfunction (eg. Radicular pain) and motor dysfunction (eg. Weakness) radiculopathy most commonly occurs in persons aged 40-50 years.
- An acute herniated disc (or) chronic spondylotic changes can cause cervical radiculopathy and myelopathy.
- The C<sub>6</sub> root is the most commonly affected one because of the predominant degeneration of the C<sub>5</sub> – C<sub>6</sub> interspace. The next common sites are at C<sub>6</sub> – C<sub>7</sub>.
- This is also frequently referred pain and tenderness along the medial border of the scapula

### **Cervical myelopathy:**

Cervical spondylotic myelopathy is the most serious consequence of cervical intervertebral disc degeneration, especially when it is associated with a narrow cervical vertebral canal.

It has an insidious onset, which typically becomes apparent in persons aged 50-60 years.

- Upper motor neuron signs
- Develop in the limbs with spasticity of the legs.
- Sensory loss in the upper limbs is common
- Tingling and numbness with progressive clumsiness.
- Involvement of the sphincters is unusual at presentation.

### **Five categories of cervical spondylotic Myelopathy as follows:**

Transverse lesion syndrome: Corticospinal and spinothalamic tracts as well as posterior columns, are involved.

Motor syndrome: This primarily involves the corticospinal (or) anterior horn cells.

Central cord syndrome: Motor and sensory involvement is greater in the upper extremities than the lower extremities.

Brown – sequard syndrome: Unilateral cord lesion with ipsilateral corticospinal tract involvement and contralateral analgesia are present.

Brachialgia and cord syndrome: Predominant upper limb pain is present



### **CSM can cause disability which are characterized by**

- G0 - Root signs symptoms with no cord involvement
- G1 - Signs of cord involvement present. Gait is normal
- G2 - Mild gait involvement present. Patient may be employed.
- G3 - Gait abnormality. Prevent patient employment.
- G4 - Ambulation is possible only with assistance
- G5 - Patient in chair – bound (or) bed ridden

### **Less common manifestations:**

- Primary sensory loss
- Tandem spinal stenosis is a simultaneous cervical and lumbar stenosis resulting from spondylosis.
- Dysphagia may be present if the spurs are large enough to compress the oesophagus.
- Vertebrobasilar insufficiency and vertigo may be observed
- Elevated hemidiaphragm, caused by spondylotic compression of C<sub>3</sub>-C<sub>4</sub>.

### **Signs:**

- Spurling sign : Radicular pain exacerbated by extension and lateral bending of neck toward the side of the lesion, causing additional foraminal compromise.
- Lhermittessign : This generalized electrical shock sensation is associated with neck extension.
- Hoffman sign
- Distal weakness

- Decreased rom in the cervical spine especially with neck extension.
- Hand clumsiness
- Loss of sensation
- Increased reflexes in the lower extremities and in the upper extremities below the level of the lesion.
- A characteristically broad- based, stooped, spastic gait.
- Extensor plantar reflex in severe myelopathy.
- Atrophy of hand musculature (Intrinsic muscle atrophy)

### **Summary of the site of lesion:**

Cervical spondylosis can produce and compression (upper motor neuron signs) (or) not compressions (lower motor neuron signs)

C <sub>5</sub>	Motor	-	Raised elbow (axillaryn)
	Reflex	-	Biceps (Musculo cutaneous N )
	Sensory	-	Upper, lateral, arm, near/over deltoid (axillaryn)
	Pain	-	Upper, lateral arm, never below elbow.
C <sub>6</sub>	Motor	-	Elbow supination (radial N) pronation (median N)
	Reflex	-	Brachioradialis (radial N)
	Sensory	-	Lateral forearm (musculocutaneous N)
	Pain	-	Lower lateral arm, possibly into thumb.
C <sub>7</sub>	Motor	-	Elbow extension (radial N)
	Reflex	-	Triceps (radial N)
	Sensory	-	Over triceps, mid – forearm and middle finger.
	Pain	-	Deep pain in triceps, front and back of forearm.

C <sub>8</sub>	Motor	-	Thumb index pinch (ant. Interosseus N)
	Reflex	-	
	Sensory	-	Medial forearm (anterior brachial cutaneous N)
	Pain	-	Medial Forearm, into 2 medial fingers.
T <sub>1</sub>	Motor	-	Finger abduction (ulnar N)
	Reflex	-	
	Sensory	-	Medial arm (brachial cutaneous N)
	Pain	-	Deep pain in axilla and shoulder some nodiation down inside of the arm.

### Stepwise Physical Examination:

Examination divided into several categories, which where done for saganavatham - in - patients and photography illustrations are given.

### Posture

- Have a smooth cervical lordosis with gentle transition into thoracic cyhosis.
- Compensatory increase in the lumbar and cervical lardosis.
- Cervical range of motion.

(ROM) – Cervical	Normal	Affected
Touch chin to chest with mouth cheared	Flexion 60 <sup>0</sup>	Reduced
Looking straight up to the ceiling	Extension 70 <sup>0</sup>	Reduced
Rotate chin to approach the shoulder	Rotation 80 <sup>0</sup>	Reduced
Bend the neek towards the shoulder	Lateral bending 45 <sup>0</sup>	Reduced

**Provocative tests:**

Used to determine the differential diagnosis

**1. Spurling test (Foraminal compression test)**

Extends the neck and then rotates and laterally bends the head to the same side, while the examiners applies downward pressure to the top of the head. If this position with (or) without pressured reproduces radicular symptoms into upper limb, cervical spondylosis is suggested.

**2. Phalan wrist flexion test:**

Full passive flexion of the patients wrist for 30-60 seconds and looking for reproduction (or) worsening of finger dysenthesiasis.

**3. Tinel's sign:**

Elicited by tapping over the median nerve on the volar aspect of the wrist. This sign also present in carpal tunnel syndrome.

**4. The elbow flexion test:**

Fully flex the elbow and observe for ulnar nerve distribution.

**5. Adson's test:**

Turns his head to the involved side, raises the chin and holds a deep inspiration and while the ipsilateral radial pulse is palpated with the arm slightly abducted from the side. If pulse diminishes – test positive – suggest thoracic outlet syndrome.

**Roo's test:**

The patient is asked to abduct the shoulders  $90^0$ , flex the elbow  $90^0$  and open and close the hands slowly for 3 minutes.

Hand pallor	}	- positive Suggest thoracic outlet syndrome
Ulnar dysesthesias		
Diminished pulse		

**Investigation:**

1. Plain cervical radiography is routine, including A.P, lateral and oblique views show.

This examination is valuable in evaluating the uncovertebral and facet joints, the foramen, intervertebral disc spaces and osteophyte formation.

- Disc space Narrowing
- Osteophyte Formation
- Degeneration in facet and uncovertebral joints
- Foraminal Stenosis
- Central Stenosis

2. Myelography, with computed tomography (CT) scanning is usually the imaging test of choice to assess spinal and foraminal stenosis.

Hylogram – may show compression of the spinal cord.

3. CT Scanning: with (or) without intrathecal dye, can be used to estimate the diameter of the canal.

CT scans may demonstrate small, lateral osteophytes and calcific opacities in the middle of the vertebral body.

4. MRI (Magnetic resonance imaging)

- Direct imaging in multiple planes
- Neural compression
- Increased accuracy in evaluating
- Intrinsic spinal cord disease
- Disc degeneration

5. Examination of CSF:

- Very high protein

**Other tests:**

- Electromyography is useful in evaluating radiculopathy caused by spondylosis.
- In myelopathy, somatosensory evoked potential (SSEP) responses are delayed (or) have a low amplitude.
- Cortical motor evoked potentials (MEP) may be more sensitive than SSEPs in evaluating spinal cord dysfunction.
- Urodynamic studies may be helpful in evaluating bladder incontinence.

**Differential diagnosis:**

- Other non – specific neck pain lesions; acute neck strain, postural neck ache (or) whiplash
- Malignancy – primary tumours, secondary deposits (or) Myeloma
- Infections – osteomyelitis (or) Tuberculosis
- Mechanical lesions:- disc prolapse.
- Fibro myalgia
- Psychogenic neck pain
- Inflammatory disease: rheumatoid arthritis
- Metabolic diseases: Paget's disease, osteoporosis

**Histologic findings:**

- Thinning and fragmentation of the articular cartilage may be observed.
- The normal smooth, white articular surface becomes irregular and yellow.

- Continued loss of articular cartilage leads to exposure of areas of subchondral bone, which appear as shiny foci on the articular surface (eburnation)
- Fibrosis, increased bone formation, and cystic changes occur in the underlying bone.
- Loss of articular cartilage stimulates new bone formation, usually in the form of nodules (osteophytes) at the bone edges.

### **Diagnosis:**

The clinical diagnosis is arrived from the features of cervical radiculopathy and myelopathy. The diagnosis may be confirmed by the radiography, myelography, tomography and magnetic resonance imaging.

### **Complications:**

- Paraplegia
- Tetraplegia
- Recurrent chest infection
- Pressure sores
- Recurrent urinary tract infection

### **Management :**

#### **1. Non operative:**

1. Analgesics
2. Local modalities
3. Exercise programme and cervical traction

## **2. Operative:**

1. Indications for surgery include the following;
  - Progressive neurologic deficits
  - Documented compression of the cervical nerve root and spinal cord.
  - Intractable pain
2. The aims of surgery are to relieve pain and neuronal structured compression.
3. Approaches for surgery are anterior (or) posterior.

### **Cervical Radioculopathy:**

Conservative treatment with analgesics and a cervical collar results, in resolution of symptoms in the great majority of patients. In chronic complicated cases foraminectomy (or) disc excision to be recommended.

### **Cervical myelopathy:**

Surgical procedures, including laminectomy and anterior excision of disc may arrest progression in disability but do not usually result in neurological improvement and carry a significant risk particularly in the elderly, the judgements as to where surgery should be undertaken may be difficult.

### **Physiotherapy:**

In acute exacerbation of disease affection the cervical spine, rest may be initial treatment.



## **1. Cervical collar:**

- Immobilization of the cervical spine is the mainstay of conservative treatment for patients with cervical spondylosis. Immobilization limits the motion of the neck, thereby reducing nerve irritation.
- Soft cervical collars are recommended for daytime use only. More rigid orthoses (Eg. Philadelphia collar, Minerva body jacket). Can significantly immobilize the cervical spine. A program of isometric cervical exercise may help to limit the loss of muscle tone that results from the use of more restrictive orthoses.
- Molded cervical pillows can better align the spine during sleep and provide symptomatic relief for some patients.
- Passive modalities generally involve the application of heat to the tissues in the cervical region, either by means of superficial device (eg. Moist – heat packs) (or) mechanism for deep heat transfer (eg. Ultrasound, diathermy)
- Manual therapy, such as massage, mobilization and manipulation, may provide relief for patients with cervical spondylosis.
- Manual traction may be better tolerated than mechanical traction in some patients)

## **2. Cervical traction:**

Vertebral traction should be the first choice of pain relief for patients suffering nerve root pain. Intermittent sustained traction is carried out after careful positioning has localized the involved segment in such cases the treatment atleast once a day is essential, prolonged pain relief will take several days to obtain.

Cervical traction provides positive patient response and can relieve the pain associated with certain neck disorders. It applies a stretch to muscles, ligaments and tissue components of cervical spine.

Cervical traction may be useful because it promotes immonilization of cervical region and widens the foraminal openings.

It is no indicated for use in condition of instability such as with “whiplash” injury.

It is most commonly used when the patient is in the supine position (lying on the back with knees bent at a  $45^0$  angle) with the neck placed at  $20^0$ - $30^0$  of flexion (Forward tilt)

## **3. Exercise of cervical spondylosis:**

- Yogic exercise: exercise programmes strengthen the neck muscles. Neck rotations of left/right , side bending, up/down and half rotation is beneficial for cervical spondylosis, neck stiffness and pain. Pranyayama (Breathing exercise) releifes the stress in the neck.
- **Morning walk:** It gives some relief to the patient, but if it is cold outside patient should always use a woolen scarf around neck while going out of house.

➤ **Range of motion exercise:**

- (i) Slowly turn head to the right until it hurts, hold and return to the centre. Do the same to the left.
- (ii) Drop chin down slowly towards chest, hold and relax. Bring head back up.
- (iii) Tilt head straight over towards left ear, hold and return it to the centre. Do the same on the right side.

➤ **Isometric exercise:**

- (i) Don't hold breath as you do these. For each exercise, press for 5 – 6 counts, then relax. Press forehead into palms. Resist any motion. Press hand against the side of head. Try to bring ear to the shoulder, but resist any motion.
- (ii) Press both hands against the back of head. Try to pull head up, but resist any motion.
- (iii) Press hand against your temple. Try to turn chin to shoulder, but resist any motion.

**Helpful diet to fight cervical spondylosis:**

- Sour things particularly curd, one strictly prohibited.
- Fried things, pulses and various preparations of pulses are also contra indicated in this condition
- Bitter vegetables like bitter variety of drumstick, neem flowers and bitter ground are very useful.
- Wheat is better than rice. But avoid taking refined wheat such as maida and suji as they lead to constipation.

**Instructions:**

- Do not getting look down to read (or do any other work). Bring the reading materials to the eye level.
- All neck movements can be performed with practice, by using trunk movements
- Use a low level pillow supporting the head and neck. Pillow line upto the shoulders level.
- While lying on sides, head should be in neutral position

**Prevention:**

1. Avoid high impact exercise, ie. Running and jumping.
2. Maintain cervical ROM with daily ROM exercise.
3. Maintain neck muscels strength especially neck extenses strength.
4. Sleep without pillows.
5. Avoid holding neck in one position for a long period (watching TV).
6. Avoid prolonged neck extension.
7. If the patient has only a morning stiffness, take hot shower every morning.

**Prognosis:**

Cervical spondylosis progresses slowly. By studying the pathological conditions of the spine, spinal cord and the nerve roots; the prognosis can be assessed. Improvement can be felt with some of the reversible changes with drug treatment. In complicated cases improvement is not possible. The signs and symptoms due to myelopahty are unmanageable. Long history of suffering multiple disc lesions and in severe compression of spinal cord may adversely affect the prognosis.

## COMPARATIVE STUDY

“கேளுமே கழுத்தின் கீழ் அரைக்கு மேல்”

Our body has 33 vertebrae, in that there are 7 cervical vertebrae. Cervical spondylosis occur mostly in the lower half ie C<sub>4</sub>, C<sub>5</sub>, C<sub>6</sub>, C<sub>7</sub>. The above line that the pain is Present in the lower half of the cervical vertebrae.

“கெடியான கரமிரண்டு மிகவே நொந்து”

This line indicates the radiating pain in both the upper limbs. This pain is due to the pathological changes occurring in the cervical vertebrae. There are 31 parts of spinal nerves in that 8 pairs are cervical nerves, having dorsal and ventral nerve roots. These nerve roots traverse through the intervertebral foraminae. While passing through the foraminae compression of these nerve roots occur due to narrowing of the foraminae. This narrowing occurs in cervical spondylosis because of the formation of abnormal osteophytes and ligamentous calcification. This compression causes neurological dysfunction and radiating pain in the nerve plexus.

“வாளுமே சரீரமெல்லாம் கனத்திருக்கும்”

Neurological examination reveals paraesthesia in the affected dermatome. Gradual sensory loss in form of numbness occurs because of neural sheath compression and neurological dysfunction.

“வாலிபர்க்கு மனங்கண்ணு மயக்கமாகும்”

The vertebral artery commences from the first part of subclavian Artery and passes through the foramen transversarium of the upper six cervical vertebrae. Osteophytes formed in cervical spondylosis compress

the vertebral Artery causing vertebrobasillar Artery insufficiency. The blood supply to the brain is decreased due to this insufficiency resulting in giddiness. The above line indicates this.

**“ஏளுமே யிரண்டு கண்ணும் எரிச்சலுண்டாம்”**

This line means burning sensation in the eye. Coolness the eyes is maintained by tharpagam situated in the head. This tharpagam is one of the constituent in kaba thathu. In the course of the diseases the uyirthatthus get deranged ultimately resulting in derangement of kabha thathu. This derangement cause burning sensation.

**“ஏற்றமாய் மலந்தானும் இறுகிக் காணும்”**

Abana vayu one of the constituent of vayu thathu is seated in the lower abdomen. It governs all the downward discharge of faeces, urine, semen, menstrual fluid and fetus. Due to derangement of abanan constipation is present (or) improper excretion takes place.

**“தேளுமே கெட்டினது பேரல் கடுக்கும்”**

In sagana vatham the pain is felt like scorpion bite. In early stage pain and rigidity is due to muscle spasm. Later ligamental calcification leads to neck stiffness.

## **MATERIALS AND METHODS**

The Clinical study on Sagana vadham was carried out in the post graduate department of Sirappu Maruthuvam, Govt Siddha Medical College, Palayamkottai. In this study 20 patients were treated as in patients and the other 20 as outpatients. After discharge the patients were also followed as out patients.

### **Selection of the Patients:**

The Patients were selected on the basis of the following clinical findings.

1. Pain, Stiffness and restricted movements in the neck
2. Radiating pain in the upper limbs
3. Tingling sensation and numbness in the upper limbs
4. Feeling of heaviness in the body and weakness of the limbs
5. Giddiness
6. Constipation
7. Mental depression
8. Burning sensation of eyes

The detailed history was taken from the patient about:

1. Occupation
2. Social economic status
3. Psychological condition
4. Diet and other habits
5. Trauma
6. Exposure to cold.

**Diagnosis:**

The diagnosis was made by following siddha diagnostic methods. Nilam, Kaalam, Poriylaridhal, Pulanalarithal, Vinaadhal, Mukkutra Nilaigal, Udal Thathukal Nilai and Envagai Thervugal, and the diagnosis of Sagana Vadham was obtained which correlates with modern term cervical Spondylosis by the X-Ray findings.

**Investigation:**

The following investigations were done in all selected patients in the laboratory of Govt.Siddha Medical College, Palayamkottai.

**Blood:**

- Total WBC Count
- Differential WBC count
- Erythrocyte Sedimentation Rate
- Haemoglobin estimation
- Estimation of Sugar
- Estimation of Urea
- Estimation of Cholesterol.

**Urine:**

- Albumin
- Sugar
- Deposits

**Radiological Investigations:**

- X – Ray cervical spine
- AP – View
- Lateral View
- Oblique View



## **Treatment**

Nilavagai Choornam 5gm at bedtime with hot water was given on the first day of treatment.

All the patients were treated with the following medicines

### **1. Aayil Pattai Choornam**

1-2gm thrice daily with hot water

### **2. Kalappai Kizhangu Oil- 30ml**

As external application

All the patients were adviced to dietary regimen (or) Pathiyam to avoid tamarind and salt

Pranayamam and simple Yogasana were adviced for a supportive therapy.

The Bio - Chemical analysis was done in the department of Bio Chemistry and Pharmacological analysis was done in the pharmacological laboratory of Govt. Siddha Medical College, Palayamkottai

## **RESULTS AND OBSERVATION**

For the clinical study 20 in patients were selected and treated in PG-III Sirappu Maruthuvam Department, GSMC hospital Palayamkottai. Results were observed with respect to the following criteria.

1. Sex
2. Age
3. Kalam
4. Thegi
5. Gunam
6. Religion
7. Thinai
8. Paruvakalam
9. Socio-Ecnomic Status
10. Predisposing Factors
11. Etiological Factors
12. Occupation
13. Clinical Presentation
14. Duration of Illness
15. Mukkutram
16. Udal Thathukkal
17. Envagai Thervugal
18. Pulse Reading
19. Neikkuri
20. Provacative Test
21. Number of Days Treated
22. Laboratory Investigations
23. Radiological Findings
24. Curative Effect

## 1. Sex distribution

**Table 1: Illustrates sex distributions and its relative percentage**

S. No	Sex	In Patients (IP)	
		No of Cases	Percentage
1.	Male	4	20
2.	Female	16	80

Out of 20 in patients, 20% were males and 80% were females.

## 2. Age distribution

**Table 2: Illustrates the age distributions and its relative percentage**

S. No	Age group in years	In Patients (IP)	
		No. of cases	Percentage
1.	31-40	1	5
2.	41-50	3	15
3.	51-60	7	35
4.	61-70	6	30
5.	71-80	3	15

Among the 20 in patients, in the highest incidence was in the age between 51-60 (35%) lowest incidence was in the age between 31-40 (5%).

### 3. Kalam:

**Table 3: Illustrates the kalam**

S. No	Kalam	In Patients (IP)	
		No of cases	Percentage
1.	Vadha Kalam	-	-
2.	Pitha Kalam	17	85
3.	Kabha Kalam	3	15

Out of 20 In Patients,

85% of cases were in the pitha kalam

15% of cases were in the kabha kalam

### 4. Constitution of the Body

**Table 4: Illustrates Constitution of the body and its Relative percentage**

S. No	Constitution Of the body	In Patients (IP)	
		No. of cases	Percentage
1.	Vadha Thegi	-	-
2.	Pitha Tegi	-	-
3.	Kabha Thegi	-	-
4.	Thontha Thegi	20	100

In IP study, 100% of cases were in the Thontha thegi.

## 5. Gunam

**Table 5: Illustrates Gunam and its relative percentage**

S. No	Gunam	In Patients (IP)	
		No. of cases	Percentage
1.	Sathuvam	3	15
2.	Rajogunam	7	35
3.	Thamogunam	10	50

## 6. Religion Distribution

**Table 6: Illustrates Religion Distribution and Its relative Percentage**

S. No	Gunam	In Patients (IP)	
		No of cases	Percentage
1.	Hindu	19	95
2.	Christian	1	5
3.	Muslim	-	-

## 7. Thinai (The habitat of the patients)

**Table 7: Illustrates the Thinai**

S. No	Thinai	In Patients (IP)	
		No. of cases	Percentage
1.	Kurinji	-	-s
2.	Mullai	-	-
3.	Marutham	17	85
4.	Neithal	3	15
5.	Palai	-	-

The people who were living in Marutham land were more commonly affected by saganavatham. Out of twenty cases taken for discussion. 15 were from Marutham 75% 3 was from Neithal (15%) and 2 were from Kuringi (10%).

## 8. Paruva kalam

**Table 8: Illustrates the parauva kalam and its relative percentage:**

S. No.	Paruva Kalam	Months	No. of Cases	Percentages
1.	Kar kalam	Aavani, Purattasi (Aug.15 to Oct.14)	7	35
2.	Koothir kalam	Iyppasi, Karthigai (Oct.15 to Dec.14)	-	-
3.	Munpani Kalam	Markazhi, Thai (Dec.15 to Feb.14)	-	-
4.	Pinpani Kalam	Masi, Panguni (Feb.15 to Apr.14)	-	-
5.	Elavenil Kalam	Chithirai, Vaikasi (Apr.15 to June.14)	7	35
6.	Muthuvenil Kalam	Aani, Aadi (June 15 to Aug.14)	6	30

Out of 20 patients 35% of them treated in llavenilkalam and 35% of them treated Kaarkaalam and 30% of them treated in Muthuvenil kalam.

## 9. Socio – Economic status

**Table 9: Illustrates the socio-economic status**

S. No	Socio-economic Status	No. of cases	Percentage
1.	Rich	-	-
2.	Middle class	6	30
3.	Poor	14	70

In IP study 14 cases (70 %) were belonged to poor socio economic status. 6 cases ( 30 %) were belonged to middle class.

## 10. Distribution According to predisposing Factors:

S. No.	Predisposing Factors	No. of Cases	Percentage
1.	Diabetes mellitus	2	10
2.	Hypertension	3	15

Some authors suggest that the history or past history of few disorders were predisposing factors for saganavatham. Hence Diabetes, Hypertension, Tuberculosis, Radiotherapy were noted in all 20 cases. Among them 2 patients (10%) were diabetic and 3 patients (15%) were hypertensive. But no history of Radiotherapy and Tuberculosis among the Twenty cases.

## 11. Distribution based on Etiological factors:

Aging was the common etiological factor for all cases. Apart from that other precipitating factors for all these twenty cases were analysed and noted 14 cases (70%) has positive occupation history and each 2

cases (10%) had the history of trauma and 4 cases (20%) had the exposure to cold respectively.

S. No.	Precipitating Factors	No. of cases	Percentage
1.	Exposure to Cold	4	20
2.	Occupation	14	70
3.	Trauma	2	10
4.	Metabolic	-	-

## 12. Occupation:

**Table 12: Illustrates occupation**

S. No	Occupation	No of cases	Percentage
1.	Beedi Workers	6	40
2.	Agricultural labours	3	20
3.	Tailoring	2	13.4
4.	Clerical work	1	6.6
5.	Tea masters and hotel workers	2	13.4
6.	Weight lifters	1	6.6

Out of 20 in Patients,

40% were beedi workers

20% were agricultural labours

13.4% were tailors

13.4% Tea masters and hotel workers

6.6% were Clerical workers

6.6% were weight lifters



### 13. Clinical Manifestations:

**Table13: Illustrates the Clinical Manifestations**

S. No	Signs and Symptoms	No. of cases	Percentage
1	Pain in the nape of neck	20	100
2.	Stiffness in the neck	12	60
3.	Radiating pain in the Upper limbs	20	100
4.	Headache	-	-
5.	Giddiness	4	20
6.	Tingling sensation	13	65
7.	Numbness in upper limb	12	60
8.	Constipation	14	70
9.	Feeling of heaviness of the body	-	-
10.	Burning sensation of the eyes	2	10
11.	Weakness of the upper limbs	16	80
12.	Mental depression	9	45

### Other associated Signs and Symptoms

13	Cough	-	-
14.	Loss of appetite	3	15
15.	Other Joint pain (Hip, Knee, Ankle)	9	45
16.	Fever	1	5
17.	Chest Pain	-	-
18.	Epigastric pain	-	-
19.	Epilepsy	-	-

The signs and symptoms noted in Saganavatham patients are given in the above table.

Pain in the nape of neck and radiating pain in the upperlimbs were almost present in all the twenty cases. Among them each 12 patients had got stiffness of neck ( 60 % ) , numbness in upperlimb. 16 (80 %) patients have weakness of upperlimbs. Constipation was reported in 14 patients (70%). 4 (20%) patients have giddiness. 9 (45%) patients had mental depression respectively.

#### **14. Distribution According to the duration of illness:**

<b>S. No.</b>	<b>Duration of illness (Months)</b>	<b>No. of cases</b>	<b>Percentage</b>
1.	0-1	3	15
2.	1-3	2	10
3.	3-6	5	25
4.	6-12	7	35
5.	12-24	2	10
6.	24-36	1	5

## 15. Conditions of Mukkuttram

### a. Disturbance in Vadha:

S. No.	Disturbance In Vadha	No of cases	Percentage
1.	Piranan	-	-
2.	Abanan	14	70
3.	Viyanan	20	100
4.	Udhanan	9	45
5.	Samanan	20	100
6.	Nagan	5	25
7.	Koorman	5	25
8.	Kirukaran	-	-
9.	Dhevathathan	7	35
10.	Dhananjeyan	-	-

In all the 20 cases viyanan and samanan were affected (100%) Udhanan was deranged in 9 cases (45%) Naagan and Koorman were altered in 25% cases due to old age. Dhevathatham was deranged in 7 cases (35%) indicating lethargy and disturbed sleep.

**b. Disturbances in Pitha:**

S. No.	Disturbances in Pitha	No of cases	Percentage
1.	Anar Pitham	5	25
2.	Ranjagam	4	20
3.	Prasagam	-	-
4.	Alosagam	7	35
5.	Sathagam	20	100

The five types of pitham were analysed in all 20 cases. Saathagapitham was altered in all cases (100%) evidenced as difficulty in handling their regular duties because of pain & stiffness in neck & upper limb. Anarpitham was affected in 5 cases (25%) indicating anorexia. Ranjagapitham was affected in 20% patients denoting low haemoglobin count.

**c. Disturbances in Kabha:**

S. No.	Disturbances in Kabha	No. of cases	Percentage
1.	Avalambagam	20	100
2.	Kilethagam	5	25
3.	Pothagam	-	-
4.	Tharpagam	5	25
5.	Santhigam	20	100

The five types of kabam were analysed in all twenty cases. Deranged santhigam was found in all 20 cases (100%) and altered tharpagam was noted in 5 cases (25%)

## 16. Involvement of Udal Thathukkal

**Table 16: Illustrates the Involvement of Udal Thathukkal**

S. No.	Udal Thathukkal	No of cases	Percentage
1.	Saram	20	100
2.	Senneer	4	20
3.	Oon	5	25
4.	Kozhuppu	5	25
5.	Enbu	20	100
6.	Moolai	20	100
7.	Sukkilam / Suronitham	Normal	Normal

Saaram, Enbu and Moolai were affectedd in all Twenty cases (100%) Seneer affected in 4 cases (20%). Oon, kozhuppu were deranged in each 5 cases (25%) respectively. Sukkilam were normal in 20 cases.

## 17. Condition of Envagai Thervugal

**Table 17 Illustrates the conditions of Envagai Thervugal**

S. No.	Disturbances in Kabha	No of cases	Percentage
1.	Naa	12	60
2.	Niram	4	20
3.	Mozhi	-	-
4.	Vizhi	4	20
5.	Malam	14	70
6.	Moothiram	-	-
7.	Sparisam	5	20
8.	Naadi (Thontha naadi)	20	100

**Table 18 : Pulse Reading (Naadi)**

S. No.	Parameters	No. of cases	Percentage
1.	Vatha pitham	15	75
2.	Pitha vatham	3	15
3.	Kaba vatham	2	10

**Table 19: Neikkuri Analysis**

S. No.	Inference	No. of cases	Percentage
1.	Spreading like snake	13	65
2.	Spreading like a ring	4	20
3.	Stands like a pearl	3	15
4.	Combination of ring and snake	-	-

**Table 20: Distribution based on provocative test**

S. No.	Clinical features	No. of cases	Percentage
1	Spurling test	Positive in 20 cases	100
2	Lhermitte sign	Positive in 20 cases	100
3	Phallen wrist flexion test	Positive in 15 cases	75
4	Elbow flexion test	Positive in 15 cases	75
5	Tinel's sign	Negative	Negative
6	Adson's test	Negative	Negative
7	Roo's test	Negative	Negative

Based on modern aspect, for the diagnostic purpose and to determine the differential diagnosis few provocative tests were done and noted in all 20 cases spurling test, Lhermitte sign were positive in all cases (100%), Phallen wrist flexion test and Elbow flexion test were positive only in 15 cases (75%) Tinels sign, Adson's Test, Roo's test were negative in all cases.

**Table 21: Distribution According to the total number of days for treatment:**

S.No	No. of days treatment	No. of cases	Percentage
1	1 – 15	4	20
2	16 – 25	13	65
3	26 and above	3	15

Among the 20 cases, 65 % were treated for 16 – 25 days. 20 % were treated 1 -15 days and 15 % were treated for above 26 days respectively.

## **22. Observations of other Clinical Laboratory Examinations:**

All the time of admission and discharge routine laboratory examination were done and values were recorded.

Haematological studies:

Among the 20 patients, 4 of them found as anaemic. Blood sugar was increase in 2 cases (10%), Cholesterol increase in 3 cases (15%) and urea were normal.

### **WBC Count:**

Total count was found in between 8000 to 11000. In few cases the lymphocyte and neutrophil were little higher.

**Erythrocyte sedimentation rate:**

At the time of admission ESR was found in between 30 to 50 (half and one hour). During discharge it was reduced.

**Urine analysis:**

Urine sugar reported in 2 cases as they were known diabetic. They were treated with Mathumega chooranam in addition to trail drugs.

**Table 23: Illustrates Radiological findings and its relative percentage**

S.No	Radiological Findings	No of Cases	Percentage
1.	Narrowing of IVS	17	85
2.	Osteophytic Changes	19	95
3.	Fusion of Osteophytes with adjacent vertebrae	-	-
4.	Loss of lordosis	4	20
5.	Excessive lordosis	-	-

**In IP study**

85% of cases showed narrowing of I.V.S.

95% of IP cases showed osteophytic changes.

20% of IP cases showed loss of lordosis.



**Table : 24**

**Curative Effects**

**Clinical Cure:**

- No longer any clinical manifestations
- Patient could work and live normally
- No recurrence after 6 months

**Marked Effect:**

- Marked reduction of manifestation
- Slight pain after movement

**Improvement:**

- Some improvement in the regional symptoms
- With relapse

**Curative effect (Based on number of cases treated)**

S.No	No.of.Cases	Result	Percentage
1	5	Clinical Cure	25%
2.	6	Marked Effect	30%
3.	9	Improvement	45%

## DISCUSSION

Sagana Vatham, one among the 80 varieties of Vatha Noigal resembles in its clinical features with cervical spondylosis in modern medicine. The main clinical features of Sagana Vatham are pain in the neck, radiating pain in shoulder and upper arm, mental depression, giddiness, tingling sensation over the upper limbs. These coincide with cervical spondylosis in modern medicine.

Twenty cases were selected for admission according to the clinical features mentioned in Yugi Vaidya Chindhamani 800. Siddha method of diagnosis was carried out with the help of modern investigations the diagnosis was confirmed and treated with the trial drugs and clearly observed. The observations are discussed here under.

### Age Distribution

This study shows highest incidence of saganavatham is above 50 years of age which was already explained by modern science that degeneration to aging is the important cause of cervical spondylosis.

This information is bestowed by our Siddhars as the wordings.

“வேண்டா ஐம்பதாம் வயது தன்னில் விரைந்து பிடுதிவியில் அப்பு மேவும் பாரே”.

The target sites affected in cervical spondylosis are generally bones, muscles nerves, hairs, blood, urine, fat which are the components of appu and prithivi boothas (Appu + Prithivi = Kabam – responsible for destruction). Hence they began to undergo degeneration above fifty.

Apart from the view of degeneration, the age above 50 is the period of overwhelming mental and physical griefs and despair due to many factors. This was reported in majority of the 20 cases.

### **Sex Distribution**

Majority affected sex is female 80%. The common cause for this may be entrapping of calcium from body above fifty years of age and from history their occupation may be one of the reasons for female dominance.

### **Living Lands (Thinai)**

The incidence of saganavatham is highest in people from Marutham 85%.

Even though siddha literatures mention marutham as a disease free zone, most of the patients came from Marutha Nilam. This may be due to the altered lifestyle, environment and food habits.

### **Quality and Character (Gunam) Distribution**

The patient 50% under this analysis bears Thamogunam, which was confessed by interrogation.

### **Socio Economic Status**

70% of people reported the signs and symptoms of saganavatham were under the poverty line and this under poverty may indirectly responsible for the higher data through their occupation.

### **Seasonal Distribution**

Out of twenty patients each 35% of patients came during Karkalam and Elavenil Kalam, 30% came during Muthuvenil Kalam.

### **Precipitating Factors**

Already the author has explained that the aging is the common cause for saganavatham. Apart from that, occupation takes the major part 75% of the causative factor.

10% of cases with trauma history, reported acute onset of cervical radiculopathy. 15% of cases reported subacute onset (already existing pain exaggerated suddenly) of cervical radiculopathy due to the exposure of cold during journey and working in mist.

### **Occupational References**

The major impacting occupation among 15 cases is Beedi rolling which is estimated as 20% (6 cases). The next coming up is tailoring which accounts 13.4% (2 cases). Only one patient 6.6% has a history of clerical work, who reported the signs and symptoms of saganavatham. Constant posterior bending by this three type of occupations leads to influence the symptoms.

Agricultural of weight bearing workers (loadman) influence the signs and symptoms of saganavatham. Yogi remarked this as "பாரமெய்தல்" is one of the cause of vatha disease. This is repeatedly remarked by the modern text book of orthopaedic (author Gulgarni) as cervical spondylosis common in dock workers who carry 100kg weights on their shoulders.

### **Clinical Manifestations**

Pain in the nape of the neck and in upperlimbs present in all twenty cases (100%). 70% of cases had constipation.

**Derangement in Vatha**

Viyanan, Samaanan were affected in all twenty cases (100%).

**Disturbances in Pitha**

Saathaga pitham was affected in all twenty cases (100%).

**Derangement in Kaba**

Santhigam was affected in all twenty cases (100%).

**Eight Parameters in our System****(Envagai Thervugal)**

By sparism, 25% cases showed muscle wasting. At the time of admission 14 patients (70%) were reported to have constipation. It was treated by purgative and laxative medicines.

In moothiram, Neerkuri and Neikuri were analysed. In 13s patients (65%) oil spread like snake and in 4 cases (20%) spread like ring, and in 3 patients (15%) stand like pearl.

Pulse reading (Naadi) was noted in all twenty cases. Vatha Pitham was observed in 15 (75%) of cases.

**Clinical Laboratory Investigations**

By laboratory investigations anaemia was found in 4 cases (20%). ESR was raised in early stage and after treatment it was reduced.

**Treatment**

The treatment was aimed to retain the deranged thoshas and providing relief from symptoms. Before treatment the patients were advised to take Nilavagai Chooranam-5gm with hot water during night for first day of treatment. The patient was asked to take rest from internal medicine and other activities on that day.

The author treated the patients with trail drugs **Aayilpattai Choornam (internal)** – 1gm tds with luke warm water and **Kalappai Kizhangu oil (external)**. During treatment, the patients were advised to follow pathiyam (avoid tamarind, tubers, etc) and advised to avoid pillows. But all aspect of pathiyam could not be imposed in the IP ward due to practical difficulties.

### **SIRAPPU MARUTHUVAM TECHNIQUES [METHOD] APPLIED IN SAGANAVATHAM PATIENTS**

#### **a) Thokkanam**

Among the twenty cases, 15 cases were treated additionally by thokkanam with Kalappai Kizhangu Oil once in three days regularly. These 15 patients showed a positive quick response of all symptoms and signs when compared with other 5 cases.

#### **b) Asana**

Few Asana procedures were explained and demonstrated by the author for all the majority of cases during their later days of treatment and advised to follow up regularly and asked to visit after a month. Among the asanas, Chakrasana and Bhujangasana were effective. Few patients consulted the author and gave positive response for Asana therapy.

#### **c) Exercises**

Among twenty cases, 12 patients were selected and asked to do simple exercises like turning neck side to side, forward and backward bending were effective. Among the 12 cases, 6 patients showed quick relief of pain when compared with non-exercise advised patients.

#### **d) Pranayama**

The author advised all twenty patients to do pranayama regularly in the future days.

#### **Curative Effect:**

On the basis of assessment of curative effect of the trial drugs, improvement effect was recorded in majority of cases 45%. 5% had 1-3 months illness, 15% had 3-6 months illness, 10% had 12-24 months illness, 15% had 6-12months illness.

Clinical cure was observed in 25% of cases. Among them 10% had below one month duration of illness, 5% had 1-3 months illness, 10% had 3-6 months illness.

Marked effect was assessed in 30% of patients which consisting 5% with below one month duration of illness. 5% had 1-3 months illness, 15% had 6-12 months illness, 5% had 24-36 months illness.

No toxic or side effects were clinically observed in any cases.

Pharmacological studies done in Pharmacology department of Government Siddha Medical College Hospital, Palayamkottai revealed that Aayilpattai chooranam bears significant Analgesic, Acute anti inflammatory effect and chronic anti inflammatory action and Kalappai Kizhangu oil has significant acute anti inflammatory action.

Bio chemical analysis of drugs was done in the department of Bio-chemistry of Government Siddha Medical College Hospital, Palayamkottai. Aayilpattai Chooranam contains sulphate, chloride, ferrous iron, unsaturated compounds, reducing sugar, amino acids.

## SUMMARY

Twenty cases with Saganavatham were diagnosed clinically based on Yugi 800 and admitted in the inpatient ward of post graduate department of Sirappu Maruthuvam, Government Siddha Medical College Hospital, Palayamkottai and treated by the trial medicine.

- Laboratory diagnosis of saganavatham was done by modern methods of investigations.
- The various siddha aspects of examination of the disease were carried out and were recorded in the proforma.
- The trial medicine choosed for both internal and external treatment were Aayilpattai Choornam – 1 gm tds with luke warm water for fifteen days as per the severity of the disease, Kalappai Kizhangu Oil (External).
- Before starting the treatment careful detailed history was carried out and recorded for the twenty selected cases.
- During the period of treatment all the patients were put under pathiyam (A specific dietary regimen).
- A periodical laboratory investigation was made for all the cases along with the radiological investigations.
- The observations made during the clinical study shows that the main internal drug Aayil Pattai Choornam is clinically effective.
- The action of external applicant in Kalappai Kizhangu Oil is also quite remarkable.



## CONCLUSION

All Twenty patients were treated for this dissertation work with Aayil Pattai Chooranam 1 gm tds with luke warm water and Kalappai Kizhangu Oil (Externally)

### **The Result was observed as:**

Improvement Effect	-	45%
Clinical Cure	-	25%
Marked Effect	-	30%

This result of the clinical trial illustrates the fruitful effect of the drugs. Hence these drugs and methodology of the treatment will become one of the milestone in treating Saganavatha Patients in Future.

**ANNEXURE – I**  
**DRUG REVIEW**  
**PREPARATION OF TRIAL DRUG:**

**ஆயில்பட்டைச் சூரணம் (Internal Medicine)**

ஆதாரம்: அகத்தியர் அட்டவணை வாகடம், பக்கம் - 70

**சரக்குகள்:**

ஆயில்பட்டை

மூக்கிரட்டை

சாரணைவேர்

சுக்கு

மிளகு

பூண்டு

ஓமம்

**செய்முறை:**

சரக்குகளை சுத்தித்து நிழலில் உலர்த்தி தூள் செய்து சலித்து எடுத்து  
கொள்ள வேண்டும்

அளவு: 1 to 2 கிராம். 3 வேளை

அனுபானம்: வெந்நீர்

தீரும் நோய்கள்: அனைத்து வகை வாதநோய்கள், சகன வாதம், சோகை

**கலப்பைக் கிழங்கு எண்ணெய் (External Application)**

ஆதாரம்: பதார்த்த குண விளக்கம் - பக்கம் - 198

**சரக்குகள்:**

கலப்பைக் கிழங்கு

வேப்பெண்ணெய்

### செய்முறை:

கலப்பைக் கிழங்கை சிறு சிறு துண்டுகளாக வெட்டி வேப்பெண்ணெயில் போட்டு காய்ச்சி கிழங்கு சிவந்து வரும் சமயத்தில் வடித்து ஆறவிட்டு சீசாவில் பத்திரப்படுத்திக் கொள்ளவேண்டும்.

அளவு: 30 மிலி

தீரும் நோய்கள்: கழுத்து நரம்புகளின் இசிவு, கழுத்து வலி.

### PROPERTIES OF THE HERBAL DRUGS:

#### Internal Medicine:

##### 1. ஆயில் பட்டை:

Common Name : Aya

Synonyms : Ayil, Avithal, Poothiyam, Aavil pungu

**Botanical Name : Holoptelia Integrifolia**

Family : Ulmaecea

Parts used : Stem bark

#### Characters

Suvai : Kaippu

Thanmai : veppam

Pirivu : Kaarppu

### CHEMICAL CONSTITUENTS:

Stem bark contains friedelin, fredelin 3- $\beta$ -ol, triterpenoid fatty acids, esters, Holoptelin. Heart wood contains  $\beta$  sitosterol, hederagenin. Leaves contains hexocosanol  $\beta$  – Sitosterol,  $\beta$  – amylin.

#### Therapeutical Actions:

Febrifuge, anti inflammatory, stomachic, laxative

#### Therapeutical Effects:

Disease of vatham, vomiting, TB

**Uses:**

"மேகப் பிடிப்பிற்கும் மிஞ்சுமதன் சூலைக்கும்  
வாகுறவே ஆயா மரத்தோலைப் - பாகமுடன்  
நன்கரைத்து பற்றிடவே நாடாது நோயெனவே  
பொன் மலர்ப்பூங் கோதாய் புகல்

- பதார்த்த குண விளக்கம்

**2. மூக்கிரட்டை:**

Synonyms : Putpakam, raktha putpika, Mukkurratai

**Vernacular Name:**

Eng : Hog weed, pigweed

Tamil : Mukkarattai keera

Sans : Punarnavam, Rakta Punarnavam

**Botanical Name: Boerhaavia diffusa linn**

Family : Nyctaginaceae

Parts used : Herb and roots

**Characters:**

Suvai : Kaippu

Thanmai : Veppam

Pirivu : Kaarpu

**CHEMICAL CONSTITUENTS:**

Punarnavine 1 and 2, Roots contains alkaloids (0.05%),  
Hentriacontane,  $\beta$ -sitosterol, ursolic acid, Glycoproteins

**Therapeutical actions:**

Diuretic & Anti – Inflammatory

Roots – Analgesic, Laxative and Diuretic

### Uses:

”மூக்கிரட்டையினிலை முறையுண் வாத நோ  
யாக்கையிற் பெட்டி யரவெண் வடங்குமே”

### 3. சாரணைவேர்:

Common Name : Charanai

Synonyms : Sharrdai, Viruchigam

**Botanical Name : *Trianthema portulacastrum***

Family : Aizoaceae

Parts used : Root

### Characters:

Suvai : Kaippu

Thanmai : Veppam

Privu : Kaarpu

### CHEMICAL CONSTITUENTS:

It contains alkaloid “Trianthemine ( $C_{32}$ ,  $H_{46}$ ,  $O_6$   $N_2$ ). It also contains ecdysterone (0.01g/kg) a Potential chemosterilant.

### Therapeutical Actions:

Laxative, Diuretic, expectorant

### 4. சுக்கு:

Synonyms : Arukkan, Navasuru, Nagaram

Athagam, upakullam

### Vernacular name:

English : Dried ginger

Tel : sonti

San : Nagaram

**Botanical Name** : **Zingiber officinale Rosc**

Family : Zingiberaceae

Parts used : Tubers

**Characters:**

Suvai : Kaarppu

Thanmai : Veppam

Pirivu : Kaarppu

**Chemical Constituents:**

Heptane, octane, myrecene, limonene,  $\beta$ -phellandrene, gingedial, sesquiterpenes, zingiberol

**Therapeutical Actions:**

Stomachic, tonic, carminative

**Uses:**

"சூலைமந்தம் நெஞ்செரிப்பு தோடமேப் பம்மழலை

மூலம் இரைப்பிருமல் மூக்குநீர் - வாலகப

தோடமதி சாரந் தொடர்வாத குன்மநீர்த்

தோடம்ஆ மம்போக்குஞ் சுக்கு

- அகத்தியர் குணவாகடம்

**5. மிளகு:**

Synonyms : Kallinai, kari, kayam, sarumapantham, Malaiyali

Vernacular name:

Eng : Black pepper

Tel : Miriyalu

San : Maricha

Kan : Menasu

**Botanical Name: Piper nigrum linn**

Family : Piperaceae

Parts used : Dried unripe fruit – (Black pepper)

**Characters:**

Suvai : Kaippu, Kaarppu

Thanmai : Veppam

Pirivu : Kaarppu

**Chemical Constituents:**

Piperine, piperidine, chavicin – is a soluble pungent concrete resin

Hentracontan – 16,  $\beta$  – sistosterol – isolated from stems

**Therapeutical Actions:**

Anti vadha, Carminative, Antiperiodic resolvent

**Uses:**

"சீதகரம் பாண்டு சிலேத்மங் கிராணிகுன்மம்

வாதம் அருசிடித்தம் மாமூலம் - லுதுசன்னி

யாசமபஸ் மாறம் அடன்மேகம் காசமிவை

நாசங் கறிமிளகினால்

- அகத்தியர் குணவாகடம்

**6. பூண்டு:**

Synonyms : Lasunam, Kaayam, velvengayam.

**Vernacular Name:**

Eng : garlic

Mala : Vellulli

Sans : Lasuna

**Botanical Name : Allium Sativum**

Family : Lilliaceae

Parts used : Bulb and oil

**Characters:**

Suvai : Kaarppu

Thanmai : Veppam

Pirivu : Kaarppu

**Chemical Constituents:**

An acrid volatile oil which is active principle starch, mucilage, albumen, sugar, scordinin, D-galactar.

**Therapeutical Actions:**

Hot, stimulant, antirheumatic.

**Uses:**

"சன்னியொடு வாதந் தலை நோவு தாள்வலி

மன்னிவரு நீர்க்கோவை வன்சீதம் - அன்னமே

உள்ளுள்ளி கண்டாய் வனை மூல ரோகமும் பேரம்

வெள்ளுள்ளி தன்னால் வெருண்டு

- அகத்தியர் குணவாகடம்

**7. ஒமம்**

Synonyms : Asamotham, Theepiyam

**Vernacular Name:**

Eng : The Bishops weed

Mal : Omam, Ayamodakam

Teb : Omamu



**Botanical Name:**

Carum copticum benth and hook.F

Family : Umbelliferae

Parts used : Dried fruit

**Characters:**

Suvai : Kaarppu

Thanmai : Veppam

Pirivu : Kaarppu

**Chemical Constituents:**

Umbelliferone, glyceryl esters of saturated and unsaturated fatty acids,  $\beta$  – sitosterol.

**Therapeutical Actions:**

Anti spasmodic, sialogogue, anti septic.

**Therapeutical Effects:**

The seeds with camphor and coconut oil is used to relieve pain and swelling in rheumatism.

Externally it is applied to relieve neuralgic pain

**Uses:**

"சீதகரங் கரசஞ் செநியாமந் தம்பொருமல்

பேதியிரைச் சல்கடுப்பு பேராமம் - லுதிருமல்

பல்லொடுபல் மூலம் பகமிவைநேர யென்செயுமே

சொல்லொடுபேரம் லுமெனச் சொல்.

- அகத்தியர் குணவாகடம்

**External Applications:****1. கலப்பைக் கிழங்கு:**

**Botanical Name:** *Gloriosa superba*, linn

Synonyms : கார்த்திகைக் கிழங்கு, வெண்தோன்றிக் கிழங்கு,  
காந்தட்கிழங்கு

**Vernacular Name:**

Eng : Superblily, Malabar glory lily

Tel : Agndhikka

Mal : vestoni

Hind : Carihari

Family : Liliaceae

Habitat : This elegant climbing plant is common in bengal and in low jungles, throughout India, burma Ceylon.

**Characters:**

Suvai : Kaippu

Thanmai : Veppam

Pirivu : Karppu

Parts used : Tuber (roots), Leaves and flowers

**Chemical Constituents:**

Seeds contains high level of colchicine, N – deacetylcolchicine, 2-demethyl colchicine are isolated from plant.

Fresh tubers contains  $\beta$  sitosteol, its glucoside, a longchain fatty acid.  $\beta$  and  $\gamma$  lumicolchicines.

Flowers contains luteolin, colchicine, 3-demethylcolchicine

Two resins, Tanin and Superbine, alkaloid gloriosine.

**Therapectical Actions:**

Tonic

Antiperiodic

Alterative

Laxative

Anti inflammatory

Anthelmintic

- A compendium of Indian Medicinal Plant – Vol – IV

**Uses:**

“கலப்பைக் கிழங்குதனாற் கட்செவியின் தேநீரும்  
உலப்புறவே போடி யொளிக்கும் - நிலப்பரப்பில்  
சென்னிப் பிடரிவலி சீழ்குட்டம் முந்திவலி  
சன்னி கரப்பன றுந்தான்”

- பதார்த்த குண விளக்கம்

**2. வேப்பெண்ணெய்:**

**Botanical Name : Azadirachta Indica A. Juss**

**Characters:**

Suvai : Kaippu

Thanmai : Veppam

Pirivu : Kaarpu

**Actions:**

Cholagogue

Antiseptic

Antipyretic

### Uses:

“வாதம் பேரம் பித்தமிகு மறாக்கி ரத்தியொடு  
மோதுகரப் பான்சிரங்கு முன்னிசிவும் -ஓதுடலின்  
நாப்ப னுறு சுரமு நாடுசந்தி யுந்தொலையும்  
வேப்ப நெய் யென்றொருகால் விள்”

இந்த எண்ணெயை வெளிப்பிரயோகமாக பயன்படுத்தினால் கழுத்து  
நரம்புகளின் இசிவு நீங்கும்.

## ANNEXURE II

### BIO – CHEMICAL ANALYSIS

#### BIO – CHEMICAL ANALYSIS OF AAYIL PATTAI

#### CHLOORANAM

#### PREPARATION OF THE EXTRACT

5gms of Aayilya Pattai Chooranam was weighed accurately and placed in a 250ml clean beaker. Then 50ml distilled water is added and dissolved well. Then it is boiled well for about 10 minutes. It was cooled and filtered in a 100ml volumetric flask and then it is made up to 100ml with distilled water. This fluid is taken for analysis

#### Qualitative Analysis

S. No.	Experiment	Observation	Inference
1.	<b><u>Test for calcium</u></b> 2ml of the above prepared extract is taken in a clean test tube. To this add 2 ml of 4% ammonium oxalate solution.	No white precipitate is formed.	Absence of calcium.
2.	<b><u>Test for sulphate:</u></b> 2ml of the extract is added to 5% barium chloride solution.	A white precipitate is formed.	Indicates the presence of sulphate.
3.	<b><u>Test for chloride</u></b> The extract is treated with silver nitrate solution.	A white precipitate is formed.	Indicates the <b>presence of</b> chloride.

4.	<b><u>Test for carbonate</u></b> The substance is treated with concentrated Hcl.	No brisk effervescence is formed.	Absence of carbonate.
5.	<b><u>Test for Starch</u></b> The extract is added with weak iodine solution.	No blue colour is formed	Absence of starch.
6.	<b><u>Test for iron Ferric</u></b> The extract is treated with concentrated glacial acetic acid and potassium ferro cyanide.	No blue colour is formed.	Absence of ferric iron.
7.	<b><u>Test of iron :</u></b> <b><u>Ferrous:</u></b> The extract is treated with concentrated Nitric acid and ammonium thyo cynate.	Blood red colour is formed.	Indicates the presence of ferrous iron.
8.	<b><u>Test for phosphate</u></b> The extract is treated with ammonium molybdate and concentrated nitric acid.	No yellow precipitate is formed.	Absence of phosphate.
9.	<b><u>Test for albumin</u></b> The extract is treated with Esbach's reagent.	No yellow precipitate is formed.	Absence of albumin.
10.	<b><u>Test for Tannic acid</u></b> The extract is treated with ferric chloride reagent.	No Blue black precipitate is formed.	Absence of Tannic acid.

11.	<b><u>Test for unsaturation</u></b> Potassium permanganate solution is added to the extract.	It gets decolourised.	Indicates the <b>Presence of</b> unsaturated compound.
12.	<b><u>Test for the reducing sugar</u></b> 5ml of benedict's qualitative solution is taken in a test tube and allowed to boil for 2 mts and added 8-10 drops of the extract and again boil it for 2 mts.	Colour change occurs.	Indicates the Presence of reducing sugar.
13.	<b><u>Test for amino acid:</u></b> One or two drops of the extract is placed on a filter paper and dried it well. After drying, 1% ninhydrin is sprayed over the same and dried it well.	Violet colour is formed.	Indicates the Presence of Amino acid.

### **Inference**

The given sample of “**AAYIL PATTAI CHOORANAM**” contains Ferrous iron, Tannic acid, Reducing Sugar, Amino acid, and unsaturated compound.

**ANNEXURE – III**  
**PHARMACOLOGICAL ANALYSIS**  
**ACUTE ANTI-INFLAMMATORY STUDIES ON AAYIL**  
**PATTAI CHOORNAM**

**Aim**

To study the acute anti-inflammatory effect on Aayil Pattai Chooranam

**Preparation of trial medicine**

1gm of the Aayil Pattai Chooranam was taken and dissolved in 10ml of hot water. A dose of 1ml was given to each rat. This 1ml contains 100mg of the trial medicine.

**Procedure**

The anti-inflammatory activity of Aayil Pattai Chooranam was studied in healthy albino rats weighing 100-150gms. Nine rats were collected and divided into three groups each containing three rats.

First group was kept controlled by giving distilled water of 2ml/100gm of body weight. The second group was given Ibuprofen as dose of 20mg/100gm of body weight. The third group received the trial medicine Aayil Pattai Chooranam of 100mg/100gm of body weight.

Before administration of trial medicine, the hindpaw volume of all rats were measured. This was done by dipping the hindpaw upto tibiotarsal junction, into mercury plethysmography. While dipping the hindpaw, by pulling the Syringe piston, the level of mercury in the center



small tube was made to coincide with red marking and reading was noted from the plethysmograph.

Soon after the measurement, the medicines were administered orally. One hour later, a subcutaneous injection of 0.1ml of 1% (W/V) carrageen in water was made into plantar surface of both hind paw of each rat.

Three hours after carrageenin injection, hindpaw volume was measured once again. The difference between the initial and final volume was calculated and compared.

This method is more suitable for studying the anti-inflammatory activity in acute inflammation. The values are given in the table.

Serial No.	Name of Drug/ Groups	Dose /100 gram body weight	Initial Reading average	Final reading average	Mean difference	Percentage inflammation	Percentage inhibition
1	Control (water)	2 ml	0.55	1.4	0.85	100	-
2	Standard (Ibuprofen)	20 mg	0.55	0.85	0.3	35.2	64.8
3	Aayil Pattai Chooranam	100 mg	0.9	1.25	0.35	41.1	58.9

The drug **Aayil Pattai Chooranam** has got **Significant Acute – anti-inflammatory action.**

## **CHRONIC ANTI-INFLAMMATORY ACTIVITY ON RATS BY COTTON – PELLETS GRANULOMA METHOD**

### **Aim:**

To study the chronic anti-inflammatory activity of the medicine Aayil Pattai Chooranam in the rats by cotton pellets implantation (granuloma) methods.

### **Preparation of the trial medicine:**

1gm of Aayil Pattai Chooranam was taken and dissolved in 10ml of hot water. A dose of 1ml was given to each rat. This 1ml contains 100mg of the trial medicine.

### **Procedure:**

Cotton pellets each weighing 10mg were prepared and sterilised in the autoclave for about one hour under 5 pounds atmospheric pressure. Nine albino rats weighing 150-200gms were selected and divided into 3 groups each containing 3 rats. Each rat was anaesthetized with ether and cotton pellets were implanted subcutaneously in the groin two on each side.

From the day of implantation a group of animals received Aayil Pattai Chooranam in a dose of 100mg/100gm of body weight. The standard group of animals received ibuprofen in a dose of 20mg/100gm of body weight.

On the eighth day the rats were sacrificed and the pellets were removed, dried to concordant weight and weighed. They were put in an incubator at 60 -80<sup>0</sup>c and then the weight of the granulation tissue was determined separately.

Serial No.	Name of Drug/ Groups	Dose /100 gram body weight	Pellet weight	Pellet weight of the Granuloma of drugs	Percentage of inflammation	Percentage of inhibition
1	Control (water)	1 ml	10 mg	250 mg	100	-
2	Standard (Ibuprofen)	20 mg	10 mg	55 mg	22	78
3	Aayil Pattai Chooranam	100 mg	10 mg	99 mg	40	60

The drug **Aayil Pattai Chooranam** has got **Significant Chronic – anti-inflammatory action.**

## **ANALGESIC STUDY ON AAYIL PATTAI CHOORANAM**

### **(In Albino rats by hot water bath method)**

#### **Aim:**

To study the analgesic effect of Aayil Pattai Chooranam

#### **Preparation of the trial medicine:**

1gm of Aayil Pattai Chooranam was taken and dissolved in 10ml of the hot water. A dose of 1ml was given to each rat.

#### **Procedure:**

Three groups of healthy albino rats on both sexes were selected. Each group having 3 rats, weighing between 100 to 150gm. The hot water bath was maintained at the temperature of 55<sup>0</sup>C.

The tail was dipped into the bath, and the time taken for each rat to remove its tail from the hot water bath was noted. The rat which taken more than 5sec for removal of its tail from hot water bath was excluded from the experiment.

First group was kept controled by giving distilled water of 1ml per 100mg of body weight.

The second group was given paracetamol 20 mg per 100mg of body weight.

The third group was given trail medicine.

30 minutes after Medicines administration, the tail of each rat was dipped into hot water bath one by one. The time taken for each rat to remove its tail was noted. The whole experiment was repeated after 30 minutes.

The results of control, standard and trial medicine groups were tabulated and compared.

S. No.	Name of Drug / Groups	Dose /100 gram body weight	Initial Reading	After Drug administration			Mean Difference
				½ hr. Average	1 hr. Average	1½hr. Average	
1	Control	2 ml	2.5 sec	2.5 sec	2.5 sec	2.5 sec	2.5 sec
2	Standard	20 mg	2.5 sec	3.5 sec	5.0 sec	6.5 sec	6.5 sec
	(Paracetamol)						
3	Aayil Pattai Chooranam	100 mg	2.5 sec	3.0 sec	4.0 sec	6.0 sec	6.0 sec

The drug **Aayil Pattai Chooranam** has got **Significant Analgesic action.**

# **ACUTE ANTI-INFLAMMATORY STUDY ON KALAPPAI KIZHANGU OIL**

**(Externally)**

## **BY HINDPAW METHOD IN ALBINO RATS**

### **Procedure:**

Anti-inflammatory study of Kalappai Kizhangu Oil was studied in healthy albino rats.

Six rats were selected and divided into three groups. To the first group distilled water was given and kept as control. The second group was given the standard drug Ibuprofen at a dose of 20mg / 100 gm body weight. The third group was treated with the test drug externally. Before the application of the drug the hind paw volume of all rats was measured. This was done by dipping the hind paw upto the tibio dorsal junction in a mercury plethysmography. Subcutaneous injection of 0.1 ml of 1% w/v carrageenin in water was made into plantar surface of both the hind paw of each rat. Three hours after injection, the hind paw volume was measured once again. The difference between the initial and final volume would show the amount of inflammation.

Taking the volume in the control group as 100% of inflammation, the inflammatory or anti-inflammatory effect of the test group is calculated.

Serial No.	Name of Drug/ Groups	Dose /100 gram body weight	Initial Reading average	Final reading average	Mean difference	Percentage inflammation	Percentage inhibition
1	Control (water)	2 ml	0.55	1.4	0.85	100	-
2	Standard (Ibuprofen)	20 mg	0.55	0.85	0.3	35.2	64.8
3	Kalappai Kizhangu oil		1.0	1.25	0.25	29.4	70.6

The drug Kalappai Kizhangu oil has got **Significant Acute Anti Inflammatory Action.**

**Out patients treated with Internal Medicine and External Application**

S. No	OP. No	Date	Age	Sex	Blood				Report
					P & S	R	N	G & H	
1	28155	29.04.08	45	F	+	+	+	-	clinical Cure
2	27947	28.04.08	38	M	+	+	-	-	Improvement
3	28664	30.04.08	45	M	+	+	-	+	Marked effect
4	28892	21.05.08	47	M	+	+	-	-	clinical Cure
5	32443	22.05.08	45	F	+	-	-	+	Improvement
6	32134	21.05.08	37	F	+	+	+	-	Marked effect
7	32238	21.05.08	50	M	+	+	-	-	clinical Cure
8	32971	26.05.08	40	M	+	+	-	+	Improvement
9	33140	26.05.08	45	F	+	-	-	-	Improvement
10	34105	30.05.08	45	F	+	+	+	+	clinical Cure
11	35015	04.06.08	39	F	+	+	+	-	Marked effect
12	35382	05.06.08	37	F	+	+	-	-	Marked effect
13	35201	05.06.08	40	F	+	+	-	-	Improvement
14	37006	13.06.08	69	M	+	+	-	+	Improvement
15	42088	09.07.08	54	M	+	+	+	-	Marked effect
16	41722	07.07.08	33	M	+	+	+	-	Marked effect
17	46641	30.07.08	55	F	+	+	+	+	clinical Cure
18	46565	04.08.08	38	F	+	-	+	-	Improvement
19	48784	11.08.08	40	F	+	+	+	-	Improvement
20	60862	16.10.08	67	F	+	+	-	+	Improvement

P & S = Pain and Stiffness of Neck, R = Radiating Pain  
 N = Numbness of upper limbs, G & H = Giddiness and Headache  
 (+) = Postive (-) = Negative



**TABLE SHOWS REPORT OF 20 I.P. CASES**

SL.NO	I.P. No	NAME OF THE PATIENT	Age / Sex	Date of Admission	Drug and Dose	Date of Discharge	No of Days	Result
1	1113	Chelladurai	65/M	02.05.08	Internal - Aayil Pattai Chooranam 1 gm tds with luke warm water External - Kalappai Kizhangu Oil 30 ml	14.05.08	13	Marked Effect
2	1154	Kasthuri	45/F	06.05.08		28.05.08	23	Improvement
3	1312	Dharma Lingam	65/M	23.05.08		14.06.08	23	Improvement
4	1319	Kaliyammal	75/F	23.05.08		12.06.08	21	Clinical Cure
5	1446	Isakimuthu	65/M	07.06.08		18.06.08	12	Marked Effect
6	1434	Muthammal	52/F	06.06.08		21.06.08	16	Clinical Cure
7	1422	Valliyammal	50/F	05.06.08		24.06.08	20	Improvement
8	1708	Subbammal	55/F	02.07.08		20.07.08	19	Clinical Cure
9	1742	Piramu	65/F	05.07.08		21.07.08	17	Marked Effect
10	1783	Pathrakali	55/F	09.07.08		21.07.08	13	Marked Effect
11	1984	Petchiyammal	75/F	29.07.08		19.08.08	21	Improvement
12	1986	Vellammal	60/F	30.07.08		28.08.08	29	Improvement
13	2047	Shanmugathai	56/F	07.08.08		23.08.08	17	Marked Effect
14	2370	Mariyammal	61/F	08.09.08		26.09.08	19	Clinical Cure
15	2338	Susaiammal	60/F	04.09.08		29.09.08	26	Improvement
16	2355	Rathinam	63/F	05.09.08		24.09.08	20	Clinical Cure
17	2446	Jeyalakshmi	73/F	16.09.08		11.10.08	26	Improvement
18	2598	Aavudaiammal	50/F	30.09.08		14.10.08	15	Marked Effect
19	2628	Muthu	63/M	03.10.08		25.10.08	23	Improvement
20	2671	Shenbagavalliammal	60/F	09.10.08		29.10.08	21	Improvement

## Radiological Recording

S. No	IP. No	Age	Sex	X-Ray No.	IVD Space Narrowing	D.C	O.P	O.L & S	L	P & P	Alignment
1	1113	65	M	166	C <sub>4</sub> – C <sub>5</sub> C <sub>5</sub> – C <sub>6</sub>	C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub> , C <sub>7</sub>	C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub> ,	Nil	N	N	N
2	1154	45	F	164	C <sub>3</sub> – C <sub>4</sub> C <sub>4</sub> – C <sub>5</sub>	C <sub>2</sub> , C <sub>3</sub> , C <sub>4</sub> , C <sub>5</sub>	C <sub>5</sub> , C <sub>6</sub>	Nil	N	N	N
3	1312	65	M	195	Normal	Nil	C <sub>7</sub>	Nil	N	N	N
4	1319	75	F	246	C <sub>5</sub> – C <sub>6</sub> C <sub>6</sub> – C <sub>7</sub>	C <sub>5</sub> , C <sub>6</sub>	C <sub>6</sub>	Nil	N	N	Loss of Lordosis
5	1446	65	M	218	C <sub>3</sub> – C <sub>4</sub> C <sub>5</sub> – C <sub>6</sub>	C <sub>3</sub> , C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub>	C <sub>3</sub> , C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub>	Nil	N	N	N
6	1434	52	F	267	C <sub>5</sub> – C <sub>6</sub>	C <sub>3</sub> , C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub>	C <sub>3</sub> , C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub>	Nil	N	N	N
7	1422	50	F	198	Normal	C <sub>5</sub> , C <sub>6</sub>	C <sub>6</sub>	Nil	N	N	N
8	1708	55	F	311	C <sub>4</sub> – C <sub>5</sub>	C <sub>4</sub> , C <sub>5</sub>	No	Nil	N	N	Loss of Lordosis
9	1742	65	F	984	C <sub>4</sub> – C <sub>5</sub>	C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub>	C <sub>5</sub> , C <sub>6</sub>	Nil	N	N	N
10	1783	55	F	892	C <sub>5</sub> – C <sub>6</sub>	C <sub>5</sub> , C <sub>6</sub>	C <sub>5</sub> , C <sub>6</sub>	Nil	N	N	N

11	1984	75	F	588	C <sub>3</sub> – C <sub>4</sub> C <sub>4</sub> – C <sub>5</sub>	C <sub>5</sub> , C <sub>6</sub>	C <sub>5</sub> , C <sub>6</sub>	Nil	N	N	Loss of Lordosis
12	1986	60	F	620	C <sub>5</sub> – C <sub>6</sub>	C <sub>5</sub> , C <sub>6</sub>	C <sub>6</sub>	Nil	N	N	Loss of Lordosis
13	2047	56	F	635	C <sub>4</sub> – C <sub>5</sub> C <sub>5</sub> – C <sub>6</sub>	C <sub>3</sub> , C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub>	C <sub>3</sub> , C <sub>4</sub> , C <sub>5</sub>	Nil	N	N	N
14	2370	61	F	1003	C <sub>4</sub> – C <sub>5</sub>	C <sub>4</sub> , C <sub>5</sub>	C <sub>4</sub> , C <sub>5</sub>	Nil	N	N	N
15	2338	60	F	897	C <sub>4</sub> – C <sub>5</sub> C <sub>5</sub> – C <sub>6</sub>	C <sub>4</sub> , C <sub>5</sub>	C <sub>6</sub>	Nil	N	N	N
16	2355	63	F	1051	Normal	C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub>	C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub>	Nil	N	N	N
17	2446	73	F	1025	C <sub>4</sub> – C <sub>5</sub> C <sub>5</sub> – C <sub>6</sub> C <sub>6</sub> – C <sub>7</sub>	C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub> , C <sub>7</sub>	C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub>	Nil	N	N	N
18	2598	50	F	1023	C <sub>4</sub> – C <sub>5</sub> C <sub>5</sub> – C <sub>6</sub>	C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub>	C <sub>5</sub> , C <sub>6</sub>	Nil	N	N	N
19	2628	63	F	1065	C <sub>5</sub> – C <sub>6</sub>	C <sub>5</sub> , C <sub>6</sub>	C <sub>5</sub> , C <sub>6</sub>	Nil	N	N	N
20	2671	60	F	1036	Normal	C <sub>4</sub> , C <sub>5</sub> , C <sub>6</sub>	C <sub>5</sub>	Nil	N	N	N

D.C-Degenerative changes  
L - Ligaments  
P&P-Pre&Para Vertebral Spaces.

O.L.&S.- Osteolytic and Sclerolytic Changes  
O.P.-Osteophytic changes